March 1999
Volume 67 No 3

Amateur Radio

Journal of the Wireless Institute of Australia

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- Australia Day Honours for VK4s
- Homebrew 813 Linear Amplifier
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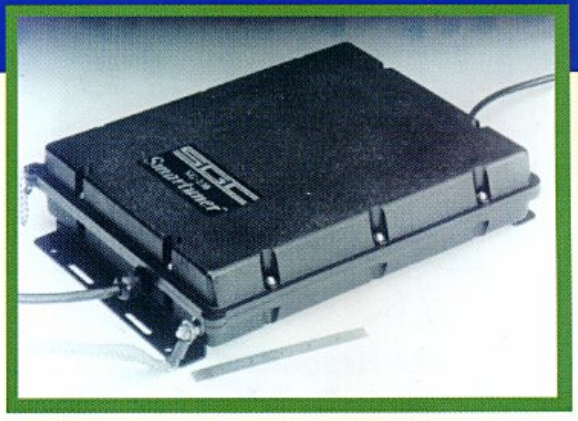

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Technical

General

Columns

Our cover this month

Brian Rickeby VK4RX, Guy Minter VK4ZXZ and Bill Sebbens VK4XZ, recipients of the Australia Day Achievement Award for communications work with Caloundra District Rural Fire Brigade.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published..

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
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Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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EDITORS COMMENT

"...Then there are statistics"

I think it was Lord Kelvin who expressed the philosophy that "knowledge which cannot be expressed in figures is of a very meagre and unsatisfactory kind".

BENJAMIN DISRAELI, on the other hand, said, "There are lies and damned lies. Then there are statistics".

The real truth, as is so often the case, lies somewhere in between. I would like to give you a few statistics which I hope are better than "damned lies". Here they are:

I joined the WIA in 1945 and have been a member ever since, ie for 54 years. I was 18 when I joined, so I am 72 this year. I achieved my AOCP and licence in 1947, so I have been licensed for 52 years. I have been editor of "Amateur Radio" for almost 15 years. This is the 157th editorial I have written for this magazine. About 20 have been written by others.

Since October 1945 every month has brought a new issue of the magazine, 641 issues to the present day. The first few were rather skimpy with only about 20 pages, but they improved as the number of members increased. By 1980 we had about 80 pages per issue and about 10,000 members. There were nearly 30 different advertisers.

Perhaps we may never again see such a large and healthy WIA. Many who might once have become amateurs have been content with CB or the Internet.

But do they give you all you want?

After a lifetime in the WIA am I going to see it collapse completely?

Maybe, or is this the bottom of the trough?

From here on the only way is up? Let us hope so, and do what we can to help.

Bill Rice VK3ABP Editor

Comment

Federal President, Peter Naish VK2BPN.

Speaking WIA

FROM TIME TO TIME I am asked to speak to Amateur Radio Clubs about the WIA and its activities at the Federal level. I enjoy this as it gives me direct contact with radio amateurs who otherwise would just be callsigns and names. Many of them are WIA members but a considerable number are not. These meetings are always lively affairs, which I use to sample the mood of the radio fraternity.

I find that there are three types of Club member, namely those who are staunch WIA supporters, those who can see no virtue in being a WIA member and the waverers who need a bit of encouragement to join us.

I direct my presentation to the latter two categories, with the general theme that the WIA is the accepted voice of amateur radio and is working very hard indeed to protect and enhance our operating privileges.

I give concrete examples of what we have achieved together with the long list of tasks still to do. After the meeting I usually find a much more relaxed attitude about the WIA. Hopefully some who were not supporters of our work will now join.

Now, you, the readers of this Journal, are already WIA members so it is expected that you are in the first category.

So, why not help the WIA Councils and myself to encourage those in your local radio club to become members of the WIA.

Listen to their concerns and help them to understand what we are doing to make amateur radio more enjoyable and future-safe. Please, let your WIA Divisional Council know what is happening at club level because it is these local organisations that seem to me to be the current heart of the amateur radio movement.

The clubs and the WIA perform complementary functions and one is not an alternative for the other.

That is how I see it. Let us all be ambassadors for the WIA.

Peter Naish, VK2BPN
WIA Federal President.

WIA News

WIA News Prepared, researched and compiled by
David Thompson VK2NH
Federal Public Relations Coordinator.

The WIA Submits Response to Discussion Paper

As we reported last month, the WIA has lodged a response to the Department of Communications, Information Technology and the Arts (DOCITA) as requested for comment on the *Radio Communications Act (1992) Review Discussion Paper* which was released for comment last year to stimulate discussion by all interested parties, including the WIA.

Executive Summary

The WIA has undertaken a detailed review of the discussion paper produced by the Department of Communications, Information Technology and the Arts. Issues that have an impact on the Amateur Radio Service in Australia have been dealt with this response to that paper.

In general, the WIA feels that the discussion paper has been biased towards large commercial and industry players, to the detriment of smaller non-profit services such as the Amateur Service.

The belief that market forces will be the most efficient regulator appears to be an underlying theme, which is an approach the WIA disagrees with if it is applied across the board to all services.

The paper also appears a little naive when considering interference management issues. The courts are not an efficient place to solve complex spectrum engineering issues. The WIA believes that the ACA must be charged with the ongoing role of mediating in these matters.

In summary, here are the major points, chapter by chapter, made by the WIA in its response.

Chapter 3
Spectrum Planning

- The WIA believes there is little scope for further relaxing the legislative basis for the Australian Spectrum Plan.
- Increased public consultation on international matters would be a worthwhile move.
- Non-conforming users of spectrum need to have limited rights and be secondary to all other spectrum users. Such usage may provide a benefit for experimental aspects of the Amateur Service.
- Civil action is not seen as a positive or useful path in dealing with interference, and may have hidden costs to the community that are greater than the current systems.

Chapter 4
Trade, Competition & Access

- Trading in apparatus licences is not seen as viable if the Amateur Service continues to be licensed using this system. This is seen as improving the case for creation of the "Amateur Operator Licence" type.
- Public and community access spectrum should not be made available for private sector management or market forces. Broad guidelines should be set for the ACA in the Act as to what areas could be

allowed to have these management philosophies applied to them.
- Some Spectrum should be declared by the minister through the Act to be "out of bounds" for commercial licensing tools, and instead be left to community and public uses, including amateur radio.
- Spectrum Sharing for the Amateur Service on a secondary basis to spectrum licencees is a method of improving spectrum efficiency while creating negligible if any costs. Moves by ACA to require the Amateur Service to negotiate this access with each individual spectrum licencee are seen as inefficient. Such access should be granted automatically by the ACA to the Amateur Service, considering the unique operational nature of the service.

Chapter 5
Taxes and Charges

- The WIA contends that none of the existing licensing schemes properly suits the nature of the Amateur Service, although the new proposed Class Operator Licence may have some potential, which should be explored further.
- In their place, the WIA offers the proposal for creating the "Amateur Operator Licence" which would address the unique nature of the service. In presenting this option, the administrative and operational requirements of the Amateur Service are outlined.
- Options for reducing the cost of administering the Amateur Service, as a result of the Amateur Operator Licence are presented.

Chapter 6
Licensing

- If distinctions between Apparatus and Spectrum licensing are removed, then the case for creating the Amateur Operator licence type is strengthened.

Chapter 7
Tenure, Compensation and Band Clearance

- The WIA sees the current 5 year licence term as attractive, and may see a longer term as beneficial in reducing costs.
- The only consumable affected by the number of amateur licences is callsign allocation space. Mechanisms for long term conservation of the callsign space are discussed.
- The WIA contends that any forced loss of spectrum to the Amateur Service should be met with increased status and tenure in remaining spectrum, and/or other new bands being made available.
- The quantity and allocation of remaining spectrum needs to take into account the Amateur Service's international usage of that spectrum (including microwave frequencies) as well as bandwidth requirements to allow the full range of communications experiments to continue to be undertaken.

Chapter 8
Frequency Coordination

- Frequency coordination activities need to be retained by the ACA in at least some form to cater for the needs of non-profit organisations.
- Removal of a subsidised system will dramatically affect the Amateur Repeater and Beacon facilities, which then has a direct impact on the Amateur Service's abilities to provide effective communications in emergencies and disasters.

Chapter 9
Defence and other public purpose uses for spectrum

- The creation of "out of bounds" spectrum is seen as an efficient way of managing public service spectrum, because it means that any costs potentially incurred through invalidly considering it for other users are avoided.
- Uniform fee exemptions for non-profit services could initially take the form of dropping the spectrum access tax component.
- Further exemptions could then be granted, including a fee free licence in various circumstances (eg non-profit services involved in carrying safety of life traffic)

Chapter 11
Satellites

- The Amateur Satellite Service should not be included in any moves to change the way satellite services are licensed or charged.

Chapter 14
Operator Proficiency

- The requirement for operator proficiency is mandated by ITU regulations.
- The existing theory examination syllabuses do not currently reflect the desired outcomes, due to inefficiencies in the revision processes being encountered.
- The current examination system is seen as the most workable solution for the Amateur Service.
- Qualifications for the Amateur Service need to cover more than just how to manage interference. There are international ramifications in the syllabus.
- Linking qualifications to the objectives of the Act requires additions to the Act to cover the full objectives of the Amateur Service.
- Maintenance of uniform standards for exam papers and syllabus is a requirement of the Amateur Service. Devolvement of exam paper creation to multiple bodies is likely to generate inefficiencies in handing exam material preparations due to extra administrative overhead required by the ACA in moderating all participating bodies.
- The issuing of certificates of proficiency is an activity that could be the subject of devolution.
- Various alternatives are suggested to the current examination system, and some short comings are given that would need to be addressed and discussed if any of the systems were to be considered for adoption.

Chapter 15
Legislation

- Any move to simplify the objectives statements of the Act need to be carefully considered, and any moves to relax the descriptions of operational and administrative procedures further may cause problems to not-for-profit services.
- The periods required to be allowed for public responses need to be spelt out in the Act, and in particular be preferably set at 90 days, to allow time for services such as the

Amateur Service to consult properly among its members.

- The mandatory requirement for licence address details to be published needs to be reviewed to allow voluntary suppression of these details in public media.
- Enforcement activities must remain under the control of the ACA, as it is a spectrum policing role that does not belong in private industry hands for a number of reasons.

Conclusion

The WIA sees the moves to relax spectrum management controls as being detrimental to all users of the radio spectrum. The continuing push for commercialisation of the radio spectrum and the ongoing belief that financial competition is the best rationing system does not apply to all parts of the radio spectrum. The WIA urges the Department to develop a better understanding of the true value of spectrum users like the Amateur Service to the Australian and international community and encourage greater participation in this activity within Australia.

Recognition of the uniqueness of the Amateur Service in what it allows participants to do is needed. This would lead to the conclusion that all of the current licensing systems fail the Amateur Service in some manner. The merits of creating the "Amateur Operator Licence" type, in addition to apparatus, class and spectrum licensing should be seen as enhancing the community resource that is the Amateur Service. The cost savings possible through definition of this new licence type should also be tangible, as was seen with the various ways that could be considered for reducing administrative contact and hence costs.

The area of operator certification, and in particular the amateur operator certificate of proficiency has scope for improvements in some aspects, but works well in others. Weakening of the requirements for examinations and syllabus would be seen as detrimental to the Amateur Service, although a streamlined system of dealing with the syllabus and examination papers would be a benefit.

Many of the other concerns raised have roots in a belief of the WIA's that the proper management of the spectrum is essential to maintaining the best environment for all spectrum users. The suggestions in the discussion paper revolving around outsourcing functions such as enforcement ring alarm bells, and should not be implemented. At the very most, they could in some small number of circumstances be put to working parties to explore the full gamut of implications.

The WIA welcomes the opportunity to have had input into the review into the Australian Radiocommunications Act and would like to see discussions continue between the department and the WIA on issues of mutual interest.

Federal President Peter Naish said "The ACA Liaison Committee, and others in conjunction with Grant Willis VK5ZWI, spent many hours putting together the WIA response. This has meant a lot of work by both Federal Councillors and coordinators in association with the ACA Liaison Committee".

If you would like a copy of the submission, send a stamped, self-addressed A4 envelope to the Federal Office.

Italians Stage High Speed CW Contest

The Italian Hams Association, A.R.I IARU member, division of Pordenone in Italy, has organized the third World Championship of High Speed Radiotelegraphy to take place in Pordenone, from April 28th to May 2nd 1999. More than 20 countries have confirmed their participation, with Japan and South Korea included. Invitations have been sent out by mail and email to the entire Region I countries and by E-mail to all the Regions I and II countries.

The email addressed to Australia read *"Even your country keeps up with a strong tradition of good telegraphers (we know it from both pile-up and most importantly contests)"*. It is also pointed out in the message, that at the time of the competitions, the 34th National Ham's Exhibition will take place too. It is one of the Europe's greatest exhibitions. A guided visit to Venice has also been organised, so as to give the chance to participants and companions to visit this wonderful city of Pordenone. If you are interested in competing in this event, contact The Organising Committee Secretary, through the email address: mauriziotoc@agemont.it

Story courtesy of Maurizio Toccaceli IV3HRO

DXCC QSL Card Collection

The WIA's Curator of QSLs Ken Matchett VK3TL has put together a unique collection of approximately 330 cards. The collection features one card from every current DXCC country. The cards were obtained from those donated to the WIA from VK2 amateurs through NSW Divisional historian Jo Harris VK2KAA. This album will, be on permanent display at the WIA New South Wales Division headquarters at Amateur Radio House House, Parramatta.

Ham Magazine Cost Cutting

NZART has announced that it is reducing the number of copies of its official publication Break-in from 12 copies a year to six. Organisation sources say the reduction is a move to cut costs of production.

The Disappearing Coastal Morse

As you will now be aware, the last Morse code transmission of Australia's coast radio service took place earlier this year. Through Qnews, we have been blessed with a transcript of Australia's Coast Radio Service, Last Morse Transmission. It reads:

"CQ CQ CQ DE VIM/VIS VIM/VIS/VIT VIM/VIS/VIT = THIS IS THE FINAL MORSE TRANSMISSION FROM THE TELSTRA MARITIME COMMUNICATIONS NETWORK. WE CONCLUDE OUR FINAL CW WATCHKEEPING AFTER 87 YEARS OF CONTINUOUS SERVICE WITH PRIDE AND SADNESS. TELSTRA, THE AUSTRALIAN MARITIME SAFETY AUTHORITY AND THE BUREAU OF METEOROLOGY WISH ALL SEAFARERS FAIR WINDS AND FOLLOWING SEAS. ON BEHALF OF THE COUNTLESS SOULS WHO WOULD HAVE DIED BUT FOR THEM, WE SALUTE ALL WHO HAVE SERVED OUR PROFESSION WITH SKILL AND DEDICATION THROUGH THE YEARS. 73S = 31ST JANUARY 1999 2359UTC + VA

Transcribed off 500kHz at 01FEB1999 0005 to 0011UTC by Gavin Reibelt, former OTC Coast Station Operator CSOCP #N57, GMDSS-OPS #A0310 and received at the Electromagnetic Testing Services Lab, Garbutt, Townsville, QLD. The audio-tape and digitised sound file are held in archives.

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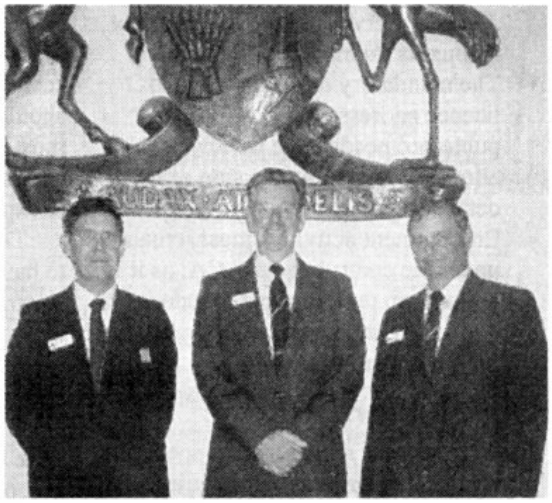
"The Three Amigos"

by Bob Harper VK4KNH



Australia Day Honours

for Guy Minter VK4ZXZ, Brian Rickeby VK4RX and Bill Sebbens VK4XZ.

THE WORD WAS OUT under the caveat of "Keep it quiet, but this should interest you!" Three Queensland amateurs were to present themselves to Parliament House on Australia Day for services rendered to the State Rural Fire Brigade Services. To tell the whole story we have to go back nearly five years when this area experienced more than a fair share of widespread bushfires. Volunteer firefighters were out week after week protecting the rural property of their own neighbours.

The bush in this neighbourhood is often rainforest, tall and thick with a canopy that barely loses touch over narrow rugged bush tracks. Retired Maleny amateurs, Guy Minter VK4ZXZ, Brian Rickeby VK4RX and Bill Sebbens VK4XZ became aware that fire brigades were operating without as much as radio backup. *"We could not believe that they were fighting fires without proper communications,"* Guy said. *"We had the expertise and the time, so we decided to do something about it."*

In the first two years Guy, Brian and Bill not only installed more than thirty-five radios in vehicles but tuned and re-programmed them, and trained the volunteers in their use. They installed the radios at Maleny, Crystal Waters, Conondale, Coochin Creek and Landsborough. As the word went out more and more requests were received.

As other Government Departments upgrade to newer UHF equipment, the older radios, many of which would have been dumped, are salvaged, sorted, repaired as necessary and tuned for the frequency allocation. They are re-programmed and tested before installation. *"All up we spend around four hours with them by the time we install the radio and give some training."* Guy said.

A complication arose in that the greatly increased number of radios was going to cause congestion on the allocated frequencies. After several band plans had been suggested from government sources the "Three Amigos", as I am told they are known, put together their own plan. No doubt their various amateur radio experiences, which include many collective years on Council, helped not only in the technical aspects of the band plan but in handling the bureaucratic aspects as well. Their band plan with 12.5 kHz channel splits was put forward and accepted with such vigour that it is now adopted statewide.

Since that time they have also performed the same service for the Caboolture Area Rural Fire Brigades and servedas consultants to the Ipswich District as well. In fact I have been told that they have basically covered an area from Ipswich to Gympie.

Each one of the three has been awarded WIAQ Merit Badges in the past. Bill received his for his long service in coordinating slow Morse broadcasts, Brian for his VHF/UHF advisory role in QTAC and as WIAQ Councillor for 7 years, and Guy for service to the WIAQ as Treasurer and President, Federal Councillor and IARU Representative. So their individual energy and spirit was well known to Queensland amateurs but the three as a team are unstoppable. One Queensland amateur puts it this way *"The sum of the three is far greater than each individual"*. Look out for the new Queensland Political Party – "The Three Amigos".

Officially their award is the "Australia Day Achievement Award" presented "for outstanding contributions to the development and implementation of the Rural Fire Service's communications network." This heavy and impressive medallion features the Australian continent on one side with a swirling cloud pattern about it. On the reverse side there is an inscription nominating the recipient.

While they would not have received their award without the selfless contribution they have made, it occurred to me that there are many instances of persons making an effort over and above what is generally expected. What is often missing is the recognition for these efforts. Often we simply accept what others are doing on our behalf without understanding the debt owed to those individuals. Think of your own club, community or indeed of the WIA and the Divisional Councils that keep your hobby alive for you. I am sure that these individuals don't expect awards or even gratitude but your appreciation helps and your assistance would be even better.

ar

Retirees help open lines of communication for brigades

THREE Maleny retirees are helping open up the lines of communication for six Caloundra rural fire brigade units.

Bill Sebbens, 66, Guy Minter, 54, and Brian Rickaby, 56, are installing and repairing much needed radio equipment in the brigades' trucks for free.

Members of Brisbane's Radio Amateurs Group, they decided to help the brigades after hearing about the "dangerous" lack of communication equipment firefighters were forced to work with.

"We just could not believe they were out fighting fires without proper communication," Mr Minter said.

"We had the expertise and the time, so we decided to do something about it."

Mr Minter and his friends have installed more than 35 radios in the past two years.

"We have put 11 in for Maleny, five for Crystal Waters, who had none when we started, three for Conondale, six for Landsborough and we have five to put in for Coochin Creek when they get them."

He said every time he looked around there seemed to be more and more radios needing installation.

"What happens is the Government gives them the radios, but then they have to pay someone to put it in, where we are doing that for free," Mr Minter said.

The trio also trains brigade members in using the radio equipment after they install it.

"All up we spend about four hours with them by the time we install the radio and give some training," he said.

A giving team . . . Brian Rickaby, left, Bill Sebbens, on radio, and Guy Minter helping brigades stay in touch.

Sunshine Coast Daily

A Homebrew 813 Linear Amplifier

(Part 1)

C.J. Bourke VK4YE
Lot 16 Waterford-Tamborine Road
Tamborine Village Qld 4270

Introduction

While the usual approach over the past twenty years or so in the design of a linear amplifier is to opt for a triode [or triodes] running class AB_2 in grounded grid configuration, I chose to revamp a design rarely seen these days. This is the once well known G2DAF circuit. It was quite popular with British amateurs, and to a lesser extent, with USA amateurs in the days of rigs with a vacuum tube output stage.

For those not familiar with the configuration, a resistor or resistive network of 100Ω to 300Ω replaces the tuned circuit of a grid fed amplifier. Tetrodes or pentodes are used because they have a very low value of plate to control grid capacitance. Being non-neutralised, stability is achieved by the damping of any feedback signal by the low value of input resistance. This amplifier uses a pair of 813 beam power pentode tubes. Other suitable types like the 4-125, QY3-125 and QB3/300 are discussed later.

The passive grid configuration has a couple of advantages compared to a grounded grid design. The input resistor provides a constant value load for the exciter to work into, and there is no requirement for a filament choke and associated pi-network. Drive levels are modest at around 25 - 30W pep. This means that your rig's output stage can loaf along quite comfortably while the linear amplifier is called upon to do the heavy work.

The passive grid design probably fell from favour with the arrival of the solid state output stage in transceivers. If your rig has a fixed 50Ω output impedance and you attempt to load it up into a 200Ω resistive load, how much power is transferred? Probably so little that you qualify as a QRP operator! The rig's SWR protection circuit winds back the output so much that it is not possible to get enough signal to drive the amplifier. However, as I discovered, it is possible to overcome this objection by constructing a 1:4 transmission line transformer [of Guanella design] on a short piece of ferrite rod.

Description

The amplifier described in this article works satisfactorily with plate voltages ranging from 1.5kV to 2.5kV and easily exceeds 400W pep output from 160m to 10m. If you are inexperienced with, or hesitant about working with high voltages, forget about tackling this project. There is no such thing as a "slight shock" from a 2.5kV power supply. IT IS LETHAL!

Turning to the circuit in Figure 1, drive is applied through contacts RA1 of input relay RA. I have separate input and output switching relays. Relay RB has the antenna changeover function. These two relays pull in together when a relay in your rig closes after the press to talk button is pressed. You must ensure that this relay has a set of contacts that places an earth on the "ground side" of RA. If you are unsure, read your manual. The 1:4 unbalanced to unbalanced [unun] transmission line transformer transforms the 50Ω impedance to 200Ω to match the 200 Ω grid resistor, which should be rated at 20W. I used a commercial 200Ω 50W non-inductive resistor. Surprisingly, 5 x 1kΩ 5W wire wound resistors in parallel gave quite satisfactory results, particularly as they have some inductance.

Drive is sampled and fed through a 0.047µF 630V capacitor to the rectifier-doubler that comprises 12 BAW62 diodes, each shunted by a 220kΩ 0.5W resistor. There are 6 diodes in each leg. A DC voltage proportional to the driving signal is applied to the screen grid of each 813. This method of generating the screen voltage works extremely well. The tubes draw around 40 - 50mA of plate current with no drive, as the screen voltage is zero. With drive, the screen voltage rises quickly to 200V or so. Do make provision to meter the screen current as it is a better indicator of resonance in the tank circuit of tetrode and pentode tubes than the conventional method of dipping the plate current.

A 0.01µF 630V capacitor passes drive to the control grid of the paralleled tubes that are operated in zero bias class AB_2 configuration. When driven positive, grid current flows through a 3.3mH RFC [Altronics L 7052] and must be metered with a 100mA FSD meter as it indicates the level of drive from your rig. While separate meters are shown to read Isg and Ig, you may use one meter. A DPDT switch is used in my amplifier. 10Ω 0.5W resistors bridge the position nominally occupied by the meter to complete the circuit when the meter is switched to the other position. See Figure 2 (c) for a circuit of this arrangement.

You will notice that on the circuit diagram in Figure 1, I have a different symbol for earth at the grounded end of the plate and load capacitors. All connections made to this point, like the

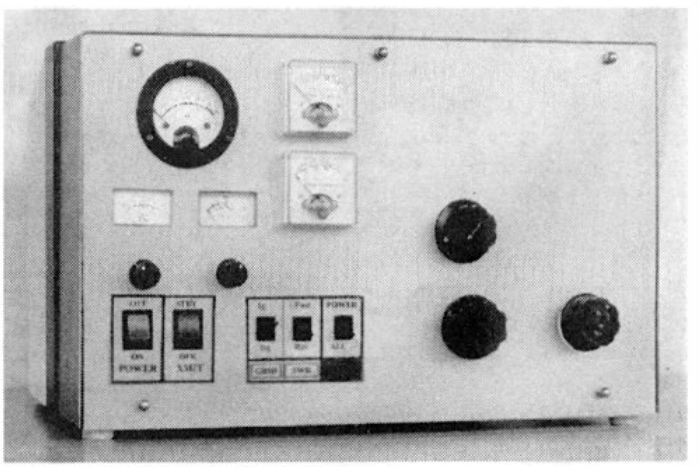


Photo 1. The front panel layout of the linear amplifier.

beam forming plates and the filament and screen bypass capacitors should be connected by 1 cm wide copper strap or brass shim. Because the tubes are not neutralised, it is imperative that a low impedance common ground be available to prevent instability. No trace of errant behaviour has been detected in the two amplifiers made to this design.

The 1mH RFC across the output is a mandatory safety item. Should the 1000pF DC blocking capacitor break down, the high-tension supply will be connected to the antenna system. The choke will shunt the DC to earth and open the 10A fuses in the primary side of the plate transformers. Under no circumstances is this choke to be left out. It comprises at least 100 turns of 0.4mm enamelled wire on a 50mm length of ferrite rod. Apply a layer of insulation tape before and after the winding is done. It does not matter if 2 or 3 layers of wire are used. Antenna changeover relay RB is an Altronics S 4197 job.

Filament Transformer

A 47kΩ 1W resistor connects the centre-tap of the filament transformer to ground. Its purpose is to maintain the tubes at cutoff when the amplifier is in standby mode. The pair of 813s requires a filament supply of 10V at 10A. This transformer is centre-tapped and is not exactly an 'off the shelf' item. You do what I have done - wind your own. You take a discarded microwave transformer, chisel out the high voltage secondary and wind the required number of turns through the window. This is easily done, as the turns ratio is about 1 turn per volt. You cannot pull laminations apart as they are welded together.

In determining the exact number of turns to use, remove the secondary winding, then wind 10 turns of ordinary insulated hook up wire through the window. Using an accurate AC voltmeter, measure the voltage delivered by this winding. Exercise extreme caution when connecting mains power to these transformers, as terminals tend to be exposed spade types and careless amateurs could easily become silent keys!

Wind on or take off half a turn at a time until 10.0V to 10.5V is measured. Now that the correct number of turns is known, you can take some 2mm lacquered wire and wind the filament winding. It is a good idea before you start the winding process to wrap teflon tape around the core to prevent accidental shorts to frame through nicks on the wire. You must make provision for a centre-tap by winding half the turns, then start again to wind the second half. When it is completed, again check that the voltage produced is between 10.0V and 10.5V. The 813 tubes require 10V±0.5V. The filament transformer must be mounted on the same chassis as the tubes. Use 2mm insulated wire to connect the filament transformer secondary to the tube sockets.

Plate Tank Circuit

The plate tank circuit is a modified pi-network. The plate tuning capacitor is tapped to the centre of the 10m coil to allow a more optimum value of Q to be obtained from 20m through to 10m. The 10/15/20m coils should be wound with 3.6mm copper capillary tubing that is used in pressure gauges, but 1.5mm wire can be safely used below 20m. Hobby shops often stock suitable capillary tubing. Try to orientate the 10m coil at right angles to the 15/20m coil to minimise coupling and losses.

COIL WINDING DATA for 813 TUBES				
BAND	TURNS	DIAMETER (mm)	LENGTH (mm)	WIRE GAUGE
160m 80m 40m 30m	25 turns tap 13 turns tap 7 turns tap 4 turns	60	40	1.6mm
20m 17m 15m 12m	8.5 turns tap 7 turns tap 3 turns tap 2 turns	40	55	3.6mm capillary tubing
10m	5 turns plate tuning capacitor tapped at 2.5 turns	30	45	3.6mm capillary tubing

For the 160m to 40m coil, which is wound in one continuous winding, the turns should fit tightly against each other. A tapping point can be made by twisting a small loop in the wire, then continue with the winding to the next tapping point. I used 60mm pvc pipe for the coil former.

Split Stator Plate Tuning Capacitor

We need to be careful about ensuring that the minimum capacitance of the plate tuning capacitor is as low as possible. It is not an easy task to find a capacitor that has a maximum capacitance of at least 220pF, so that the 160m band can be tuned, yet have a minimum capacitance of 10pF, to ensure we can tune the higher frequencies and still maintain an acceptable loaded Q.

It is possible to divide the capacitor up into two unequal sections. The first one can have a maximum capacitance of around 50pF while the second contains the balance of the capacitance. A miniature relay [Altronics S 4197] can switch the two sections together for operation on the 80m and 160m bands. Transmitting type tuning capacitors are easily pulled down into stator and rotor plates. The stator plates are usually held together by two long threaded bolts on which plates and spacers alternate. If the stator plates are soldered in position, then it is unlikely you have a tuning capacitor made for high power RF work.

Provided you have the correctly constructed capacitor, remove the rotor assembly.

It is quite easily done by removing

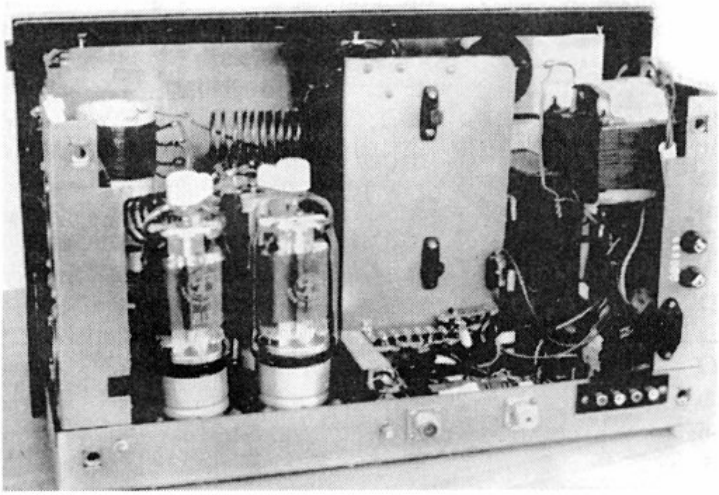


Photo 2. Internal arrangement of the major components.

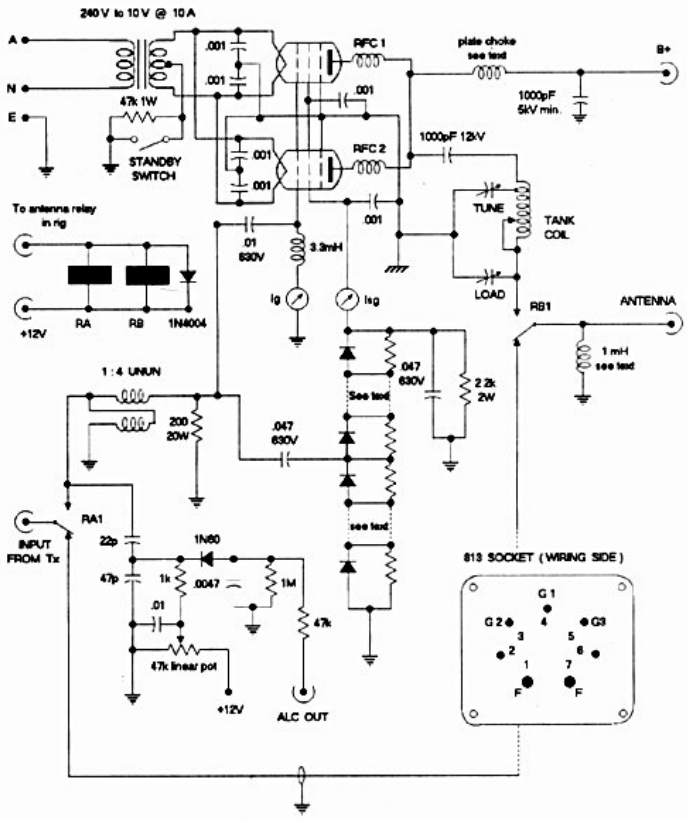


FIGURE 1.

screws that hold the back plate to (usually) four sidebars. The spindle-retaining nut then can be removed and the rotor should slide out. The stator plates alternate with spacers on long threaded stock. Remove the nuts that secure the stator assembly to the ceramic or plexiglass insulating blocks. The aim is to have three or so stator plates and their associated spacers at one end of the threaded stock, then a gap where two or three stator plates (and spacers) have been removed. The threaded stock is then cut so that you have a small stator section and a separate main stator section. A solder lug and a nut will complete the job - both stator sections should be quite rigid. Of course, the smaller tuning capacitor you are creating should be located at the end closest to where the 10/15/20m tank coils are to be positioned. Next, you remove a couple of rotor plates corresponding to the gap between the two stator sections. You may need to include a washer as well as the spacers to retain the correct position of the last three or four rotor plates relative to the smaller separate stator assembly. If everything aligns satisfactorily, reassemble the modified rotor and secure the back plate. My original capacitor tuned from 30 - 320pF and now tunes from 8 - 55pF and from 15 - 260pF.

The load capacitor should ideally be a triple ganged job that was common in valve type radios. Generally their capacitance ranges from 15 - 500pF per section. Plate spacing is more than adequate, as you will be working into a 50 or 75Ω load. Accidentally transmitting into an open circuit should produce some nasty fireworks! For 160m you will need to switch in an additional capacitance of 1500pF. This additional capacitor must be a high voltage ceramic type to handle the RF current. It is switched into operation by the 160m contact on the bandswitch. Refer to the circuit in Figure 2(b).

Band Selection

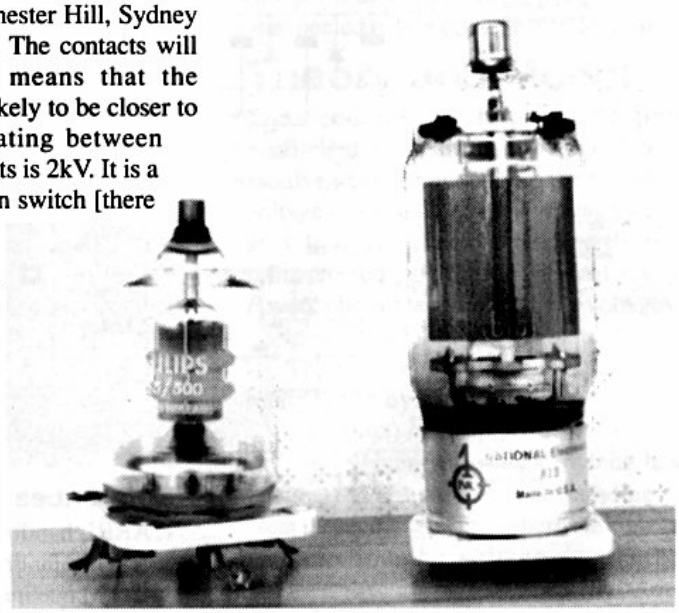
The next major difficulty for home constructors is the bandswitch. They are not easily procurable for a project like this. They can be sourced, but not cheaply. I used a Millen heavy duty switch originally intended for a 2kW linear amplifier. A suitable rotary switch is available from Farnell Electronics, Chester Hill, Sydney [stock code 422-587]. The contacts will switch 10A which means that the unswitched rating is likely to be closer to 30A. The voltage rating between adjacent switch contacts is 2kV. It is a single pole, 12 position switch [there is a 2 pole 6 position version as well] and retails for about $85. If required, 9 positions will cover all current amateur allocations from 160m to 10m.

Plate Choke

The plate choke was made using a 150mm length of standard 20mm PVC conduit wound with 0.4mm enamelled wire. About 320 turns gave a winding length of 125mm that was terminated on solder lugs at the top and bottom of the PVC former. Calculated and measured values gave an inductance of around 300 mH. As with all plate chokes, check for self-resonances with a GDO. I found some above 30MHz but none were apparent between 160m and 10m. Self-resonance can cause hot spots, and in severe cases, the choke will burst into flames. If you do find a resonance near to an amateur band try to eliminate it by winding on more turns or taking some turns off. The high tension can be connected to the plate choke via RG213 coaxial cable. Strip off the PVC jacket and remove the braid to leave only the inner conductor and polyethylene insulation [rated at 5kVrms].

RFC 1 and RFC 2 are parasitic chokes designed to suppress VHF oscillations. I used 6 turns of 1.5mm enamelled wire close-wound with a diameter of 6mm. The chokes were terminated on the plate connectors, and their common ends were connected to the plate choke via a short length of tinned copper braid removed from miniature coax cable.

The 0.001µF RF bypass capacitors at the filament pins as well as at the screen grids are all 3kV ceramic types that can handle RF current. Twenty or thirty years ago you would find mica capacitors specified for high RF current applications, however while they are still being manufactured, they are not readily available in this country. The plate DC



blocking capacitor is made up of 2 x 2200pF ceramic capacitors in series. Each has a voltage rating of 6kV. In Brisbane, David Hall Electronics sells these - Ph (07)3808 2777.

Optional ALC

The ALC circuit is a fairly standard arrangement. A capacitive voltage divider samples the drive at the input of the unun. The 1N60, or similar germanium diode, is reverse biased at a voltage determined by the setting of the 50kΩ potentiometer which should be mounted on the front panel. ALC operation is very simple. When a sufficiently negative-going peak voltage causes the diode to conduct, the difference voltage is sent back to your rig's ALC input to compress excessively high peaks in the drive signal. If you do not want to include the ALC facility, it can be omitted so long as you are aware of the consequences of over driving a high power linear amplifier. If you are unaware I'm sure your TV watching neighbours will inform you fairly smartly!

Input Circuit

Now that the plate tank circuit has been taken care of, we need to ensure the input side can accept all bands from 160m to 10m. The unun consists of 13 bifilar wound turns of ordinary hook up wire on an 80mm section of standard ferrite rod. This works as well as any toroid I have experimented with.

Due to the input capacitance of the tubes, the SWR increases to around 1.5:1 at 20m. To maintain a low SWR from 20m to 10m, use slug tuned coils to form a parallel resonant circuit with this capacitance. They are switched in by miniature relays [Altronics S 4160]. For 20 m use 20 turns of 0.4 mm wire on a 6 mm former. The 15m coil consists of 12 turns of 1mm wire on a 6mm former, and the 10m coil consists of 6 turns of 1mm wire stretched to a length of 1cm on a 6mm former. All coils are fitted with an F14 slug.

Once the coils have been fitted, the SWR stays very low and flat across each band because of the low Q due to the swamping effect of the 200Ω resistor. The earth end of R1 should be terminated very close to the braid of the coax bringing the input signal from the contacts of RA1. I have tried to make this obvious on the schematic of the input circuit.

I coupled a 12-position rotary switch wafer to the shaft of the band switch using a switch mechanism from Farnell Electronics. All relays were wired up so that they were switched in according to the band selected. This is a neater option than having to provide a separate 'input selector' for switching in these relays. The Farnell stock numbers for the switch mechanism and 12-position wafer are 146-033 and 146-034 respectively.

Next Month:

To complete this article next month we will cover the power supply, filtering, metering, mounting and cooling the tubes, testing, alternate tubes, coil winding details, and component suppliers.

Should anyone wish to enquire further about this article, VK4YE, the author can be contacted through:

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You may also care to look at our Internet Homepage www.powerup.com.au\~jabba for a copy of this article plus two QBASIC programs I have written. One calculates pi-network constants, and the other calculates the dimensions of single layer air wound coils.

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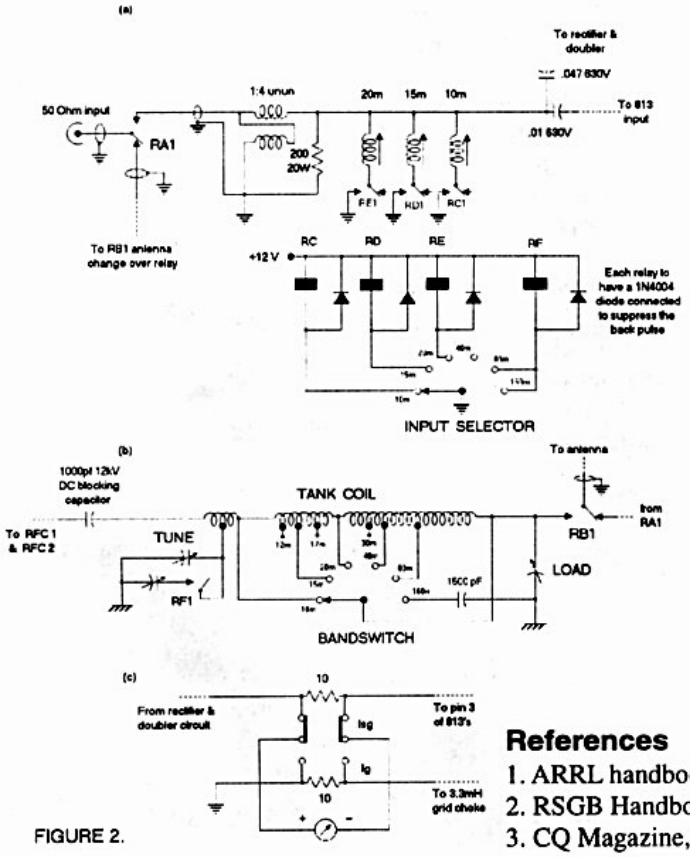

FIGURE 2.

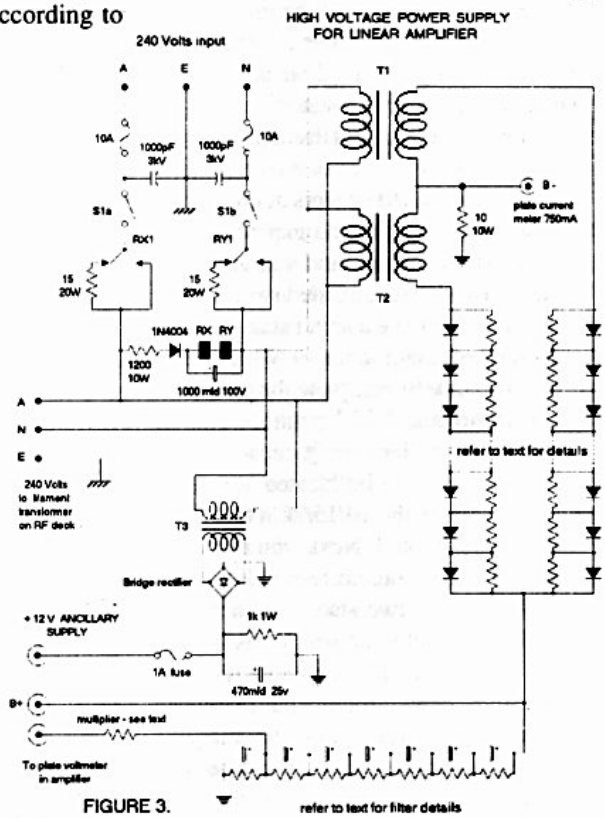

FIGURE 3.

References

1. ARRL handbook 1968, p 195 - 198
2. RSGB Handbook, Fourth Edition, Chapter 10.62 - 10.65
3. CQ Magazine, March 1966

Boom Corrections to Element Lengths of Yagis at 144, 432 and 1296MHz

Effect of Boom and Element Diameters

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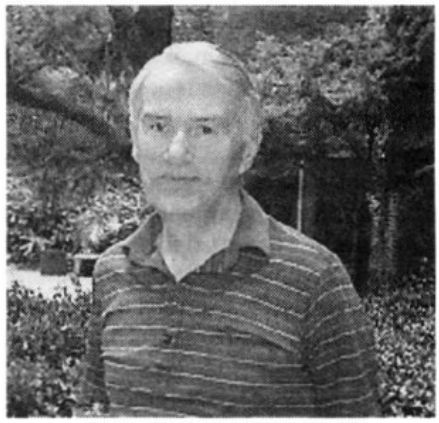

Guy Fletcher VK2KU

This article describes measurements of boom correction factors for yagi elements mounted through the middle of and in good electrical contact with a metal boom.

THE EXPERIMENTS were performed at frequencies of 144.2MHz, 432.2MHz and 1296.2MHz, and extend the range of boom diameters (as a fraction of wavelength) for which data are available up to 0.08λ, as well as exploring the effect of element diameter. The results show clearly that the boom correction depends not only on boom diameter but also on element diameter and element length.

The effect of the boom may be represented by a negative inductive reactance at the centre of the element. A simple empirical formula for this inductance is given, which agrees well with all the experimental data, and enables the prediction of the correction for any combination of boom diameter and element diameter, given in the form of a universal graph.

The observed dependence on element length is intrinsic to the model of boom reactance, and leads to a correction that tapers as the element length reduces. This may be adequately represented in practice by a simple power law correction to the value for a standard element length of 0.42λ taken from the graph.

The effect of using tapered corrections for the different element lengths (rather than a single fixed correction) has been applied to examples of practical yagis. The difference is negligible at 144MHz and small at 432MHz. However at 1296MHz, where boom diameters may be relatively large, the use of a fixed correction appears to change the performance parameters of the antenna quite significantly.

Background

Boom correction factors are discussed by Günter Hoch DL6WU in the "VHF/UHF Dx Book" (edited by Ian White G3SEK), and other similar references. Günter Hoch's corrections may be represented by a formula due to Ian White:

$$C/B = 25.195\,(B/\lambda) - 229(B/\lambda)^2$$

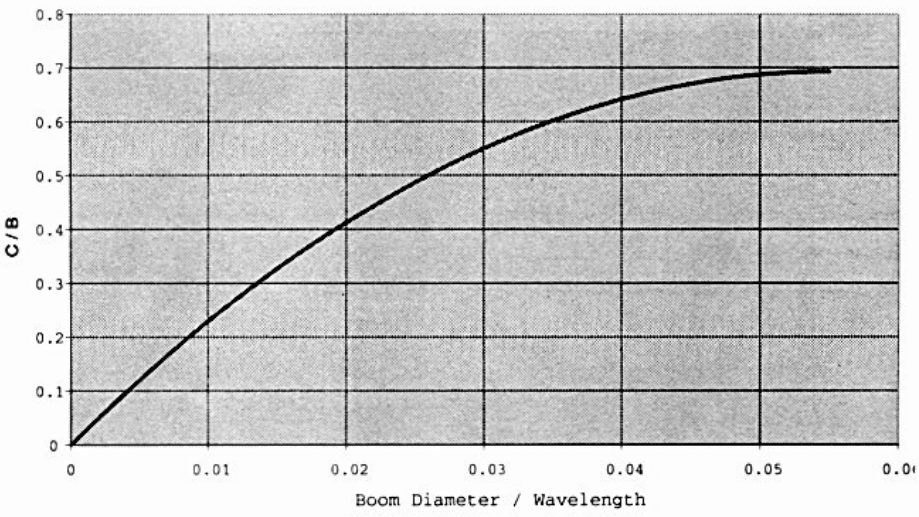

Fig 1. The G3SEK Formula for Boom Correction

where C is the Correction Factor in mm and B is the Boom Diameter in mm. This formula is not valid at boom diameters greater than 0.055l, although diameters of up to 16mm (0.07l) are common at 1296MHz. Ian White's formula is shown in the form of a graph in Figure 1, and includes no dependence on Element Diameter or Element Length. Also the curve is assumed to pass through the origin, though there is no real reason to expect this; C is obviously zero when the Boom Diameter B is zero, but the ratio C/B does not need to be zero to make C zero.

No data seem to be available for larger boom diameters, which is perhaps why some amateurs have remarked on the difficulty of matching antennas correctly at 1296MHz. The experiments to measure boom corrections are in fact quite straightforward, so it was decided to make some simple measurements. The scope of the project expanded rapidly as the unexpected nature of the results appeared.

Theory and Model

The complex voltage reflection coefficient ρ measures the magnitude and relative phase of the ratio of the reflected voltage wave to the forward voltage wave at a load. In these experiments the reflected power P_R and the forward power P_F were measured rather than the voltages:

$$|\rho| = (P_R/P_F$$

The voltage standing wave ratio σ is related to $|\rho|$ by:

$$\sigma = (1+|\rho|) / (1-|\rho|)$$

Any element of a yagi antenna has energy stored in the fields surrounding it. Near the element centre, where the current is large and the voltage small, the

dominant field is magnetic. Near the ends, where the current is small and the voltage large, the electric field is dominant. If the element passes through a larger boom at its centre and with which it is in good electrical contact, the skin effect forces the current to flow around the outside of the boom instead of directly along the element surface. This reduces the volume of the magnetic field around the element, and therefore also reduces the stored energy. Since the stored energy is directly proportional to the self-inductance L of the element, the effect of the boom is to contribute a negative inductive reactance (-j) to the element impedance Z. This negative inductance contribution will increase in magnitude as the boom diameter increases.

For thicker elements the volume of the magnetic field is reduced anyway, because the field is limited to the region outside the element. Thus there is less field volume for the boom to remove, so the effect of thicker elements will be to reduce the magnitude of the negative inductance contributed by the boom, and hence the boom correction required.

The element-plus-boom can be restored (more or less) to its original electrical effect by lengthening the element at the tips so as to contribute a negative capacitive reactance (ie +j) to offset the boom effect; this is the Boom Correction. Brian Beezley K6STI writes in the handbook to his yagi design and analysis program YO6 that elements (of different diameter) are electrically equivalent when the phase angle of the complex self-impedance Z is the same. This is slightly different from simply equating the imaginary components (ie the reactive parts) of Z.

The Experiments

Thirteen experimental measurements were made with the following boom (B) and element (d) diameters, limited by available materials:

144.2MHz:	B=32.0mm	d=4.76mm, 6.35mm
432.2MHz:	B=16.2mm	d=2.40mm, 3.18mm, 4.76mm
	B=20.2mm	d=2.40mm, 3.18mm, 4.76mm, 6.35mm
1296.2MHz:	B=16.2mm	d=1.60mm, 2.40mm, 3.18mm, 4.76mm.

The signal source was a Yaesu transceiver FT736R, delivering a nominal 25W on 144MHz and 432MHz, and 10W on 1296MHz.

Forward and reflected power was measured with a Bird 43 wattmeter, using different plug-in elements for forward and reflected power. Measurement precision for the reflected power was about 0.02W on 144MHz, 0.04W on 432MHz, and 0.01W on 1296MHz. Measurement accuracy is not nearly as good as this, but the experiments consisted essentially of comparing different antennas to obtain the same reflected power, so calibration errors are not really as important as reading precision.

For each frequency and boom diameter, a simple 3-element yagi was designed using the program YO6, and constructed on a dry wood boom (usually rectangular). The feed impedance was around 25Ω, and T-matching was used with a conventional 4:1 balun. In each case the 3 elements were cut to the expected length; then the T-bars and the length of the driven element (DE) were adjusted for zero reflected power with no metal boom sleeve in place. The metal boom for the director (D1) was an exact sliding fit over the wood boom, and extended about half the distance back towards the DE and a similar distance forwards. Elements were pinned in place with a self-tapping screw, which made no observable difference to any reading, to ensure good electrical contact between element and boom. This arrangement guaranteed that the director D1 could be repeatedly removed and replaced in exactly the same position.

Each antenna was mounted to radiate vertically upwards, so as to avoid ground effects. With the boom sleeve in place and the director cut deliberately long, the forward and reflected powers were recorded for each value of director length

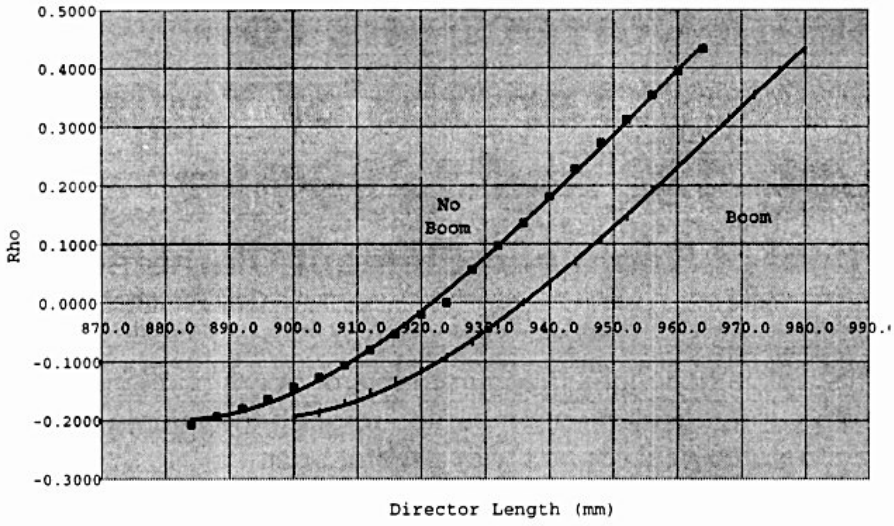

Fig 2. Data for Frequency 144.2MHz, Boom 32.0mm, Element 6.3

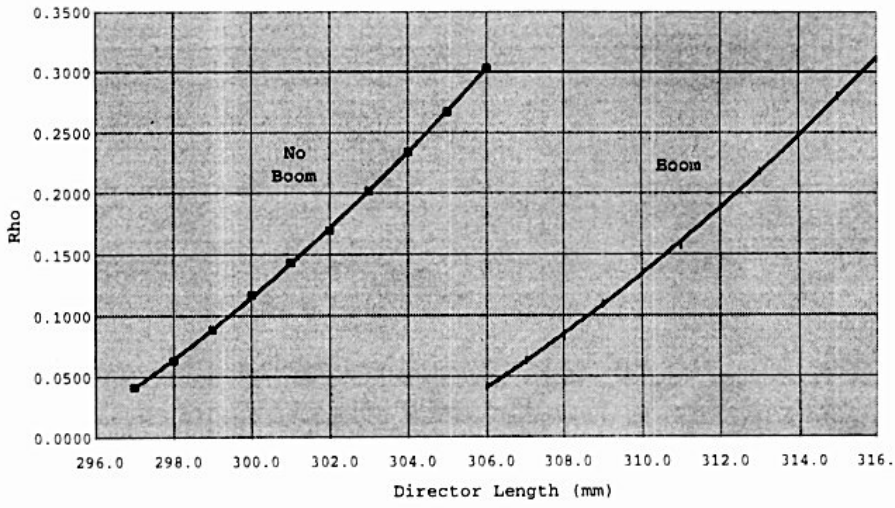

Fig 3. Data for Frequency 432.2MHz, Boom 20.2mm, Element 4.76

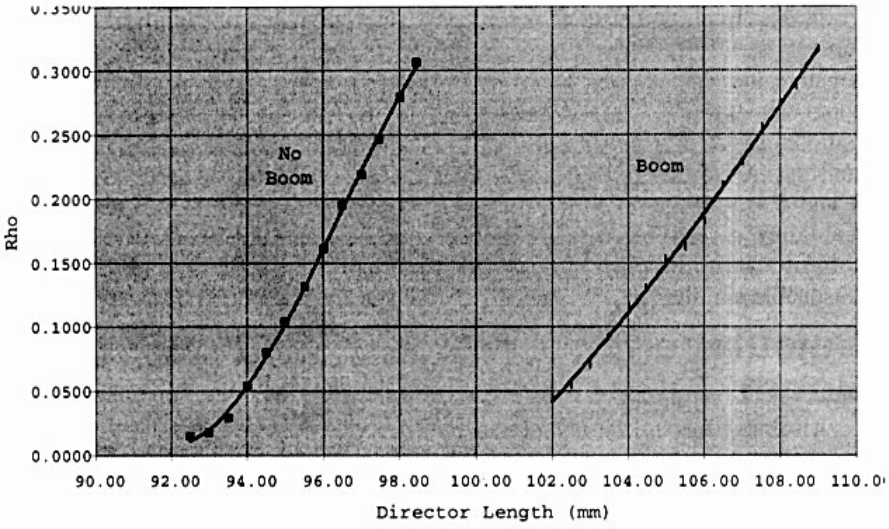

Fig 4. Data for Frequency 1296.2MHz, Boom 16.2mm, Element

(L1). The length was systematically reduced by small increments until the reflected power was near zero; sometimes the measurements were continued well beyond this point. The boom sleeve was then removed and the process repeated over a similar range of reflected powers. The voltage reflection coefficient ρ, equal to the square root of the power reflection coefficient, was plotted against L1. The expectation was that two parallel curves would result, their separation being the desired boom correction. In fact the curves turned out to be not quite parallel!

Element lengths were measured with a steel ruler on 144MHz and 432MHz to a precision of about 0. 2mm, and with dial callipers on 1296MHz to a precision of 0.01mm. These two methods are not really equivalent in that the ruler measures a length averaged by eye over the end faces, whereas the callipers measure between the high points on each end face. However since all measurements in any one experiment were made in a consistent way, the accuracy in the experimental boom correction factors, found from a length difference, should approach twice the appropriate precision above. The smoothness of the raw data curves supports this belief.

The Results of the Experiments

Figures 2-4 are typical of the 13 graphs obtained for Voltage Reflection Coefficient r as a function of director length (L1) with and without a metal boom sleeve. Careful study of these (and the other) graphs shows that the Boom Correction, measured by the separation of the two curves, decreases slightly as the director length is reduced. This finding is not really very surprising, but is significant because such dependence has not previously been suggested.

From each graph the director lengths with and without the boom sleeve were tabulated at several values of voltage reflection coefficient ρ, usually 0.1, 0.15, 0.2, 0.25 and 0.3, and hence a set of Boom Corrections found. For each of the more than 50 pairs of director lengths, the program YO6 was used to find the complex element impedance Z. The program actually requires a reflector to be present, so this was placed 100m behind the Driven Element, where it would have no discernible effect. The use of a particular program such as YO6 to find element impedance is open to some criticism, and this important point will be discussed below.

The impedances from each pair of director lengths were used to find the negative inductive reactance X contributed by the boom. This is best illustrated by an example. The results from Figure 3 for ρ = 0.1 are reproduced in Table 1.

Table 1

Results taken from Figure 3 for ρ =0.1		
	No Boom Sleeve	With Boom Sleeve
Director Length (mm)	299.45	308.60
Impedance Z (Ω)	51.5-35.7j	55.5-20.0j+X

The Boom Correction is here 9.15mm. The X in the column for impedance with the boom sleeve present represents the unknown contribution of the boom to Z. The value of X was found by equating the phase angle ϕ of Z with and without the boom sleeve, so that the two situations are electrically equivalent. This gives X = -j18.50 Ω . Originally the comparison was made by simply equating the imaginary components of Z, but this procedure led to model curves which did not converge in the way actually observed, so the phase angle method was adopted. The values of X found in this way were reasonably consistent over the whole range of ρ and were averaged.

Finally the value of X was used to predict boom corrections over a wider range of element lengths covering the range typical of a long yagi, by reversing the procedure. For the example in Table 1, the calculated Boom Corrections range from 7mm for the shortest director to 12mm for the reflector. This shows clearly the variation of boom corrections to be expected over the length of such a yagi, and the errors introduced by using a fixed boom correction for all elements. A table of such calculated

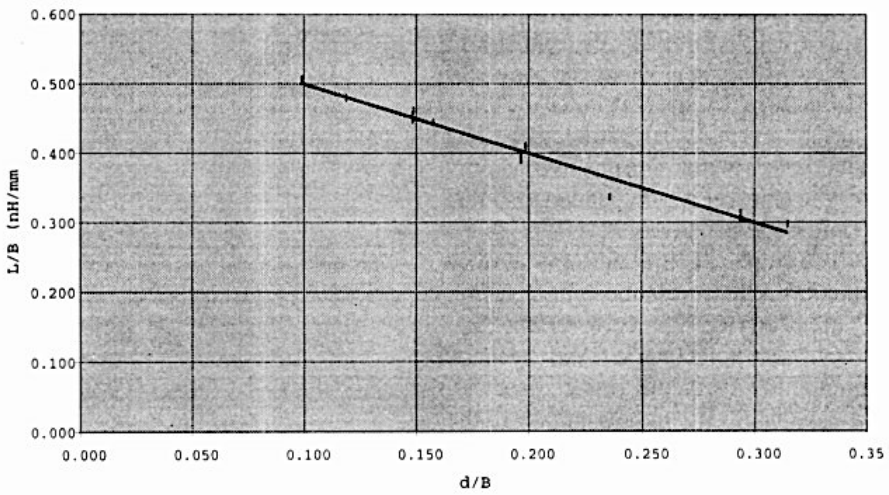

Fig 5. Dependence of Boom Inductance L on B and d

Boom Corrections (which include the experimental values as a subset) was generated for all 13 experiments.

Each of these 13 tables of calculated corrections was plotted against director length L1, and they were all found to fit closely to a simple power law relationship. The optimum value of the power varied slightly across the experiments, but a satisfactory fit for all the data was given by:

$C = \text{constant} \times (L1)^{1.8}$,

or $(C/C_0) = (L1/L_0)^{1.8}$,

where C_0 and L_0 correspond to some standard director length. For various reasons this standard element length was chosen to be 0.42 λ, and the final graph presented below corresponds to this standard length.

Effect of Boom and Element Diameters

In spite of trying many different plots it has not proved possible to represent the dependence of the Length Correction (C) on Element Diameter (d) in any simple way. This is not entirely surprising because of the complexity of the effect on element impedance of varying the tip length to compensate for the effect of the boom. It has proved very helpful to break the problem into two separate parts:

1. The effect of the boom on the element impedance. As explained above, this can be represented as a pure negative reactance, the value of which depends also to a lesser effect on the element diameter.
2. The increase in tip length required to compensate for this reactance, so as to restore the original phase to the element impedance.

The negative reactances from the 13 different experiments have been converted to inductance (L), and are plotted in Figure 5 in the form L/B against d/B. The inductance is plotted as a positive quantity for convenience, it being understood that it contributes negatively to Z.

The graph of L/B against d/B shows a remarkable linear relationship:

$$L/B = 0.5994 - 0.999(d/B).$$

Only one point (at 432.2MHz) departs appreciably from the line of best fit. Having due regard to the accuracy of the data, this relationship is most simply expressed as:

$$L = 0.6B - 1.0d.$$

In this simple and elegant expression (Guy's Rule!) L is the value of the negative inductance contributed by the boom-element combination to the element impedance Z. For the values of the constants as presented, L is in nH while B and d are in mm. With this rule, the reactance of any boom and element combination can be predicted with reasonable confidence.

Calculation of Boom Corrections

It is straightforward, but not particularly convenient, to use the inductance value given by Guy's Rule to calculate a value for the boom correction C for any combination of boom diameter, element diameter and element length. This involves using YO6, first to find the complex impedance Z of the uncorrected element length and hence its phase ϕ, and then by a process of trial and error to find a new element length which, when combined with the negative reactance contributed by the boom, has the same phase.

Instead, for the standard element length of 0.42 λ, Boom Corrections have been calculated over a wide range of boom diameters (B) and element diameters (d) covering all the sizes likely to be met in practice.

The results may be plotted in the form C/B against B/λ , as in Figure 6, with separate curves for different element diameters. Alternatively C/B may be plotted against d/B, as in Figure 7, with separate curves for different boom diameters. Other possibilities include using d/λ in place of d/B.

Figure 6 may be compared directly with Figure 1, based on the G3SEK formula. The curve shapes in Figure 6 are generally similar to that in Figure 1, but it is apparent that the intercepts on the vertical axis of Figure 6 are well above zero for all values of dB. The curves in Figure 6 also intersect making it hard to use in practice. The reason for these intersecting curves is clearer in Figure 7. In general as the element diameter increases the boom correction factor C/B decreases as expected from the discussion earlier. In the case of thick booms however, the boom correction factor also falls for very thin elements, for which the reactance component is large. This is in fact a consequence of the use of a standard element of fixed length rather than fixed phase. The use of a standard element of fixed length is much easier to deal with in practice, but leads to curves that intersect when boom diameter is used as the horizontal coordinate.

For the practical prediction of boom corrections, Figure 7 is significantly easier to use than Figure 6, because the various curves are well separated and generally less inclined.

Practical Significance of Length-Dependent Boom Corrections

The detailed results described in this article are novel in that they lead to boom correction factors that depend not only on

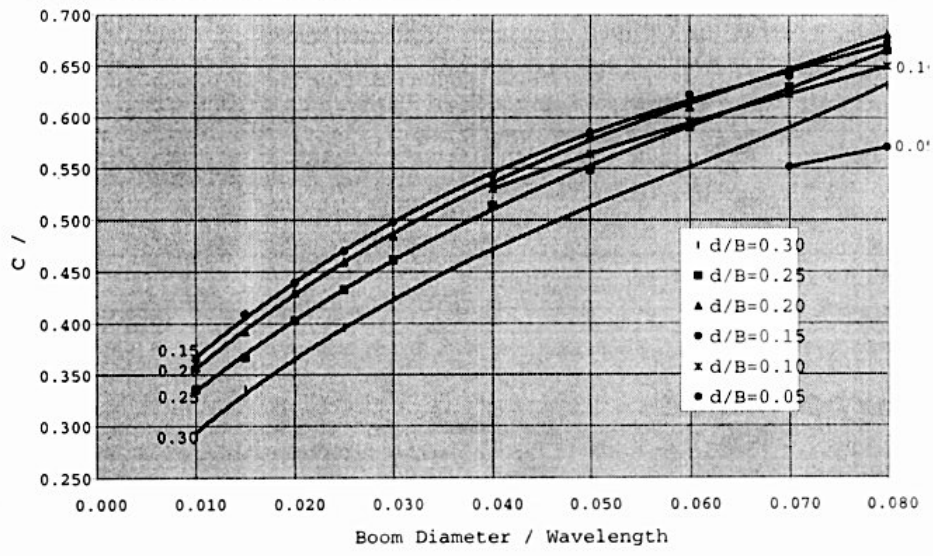

Fig 6. Boom Correction for Elements of Length 0.42 Wavelen
d/B values as marked for each curve

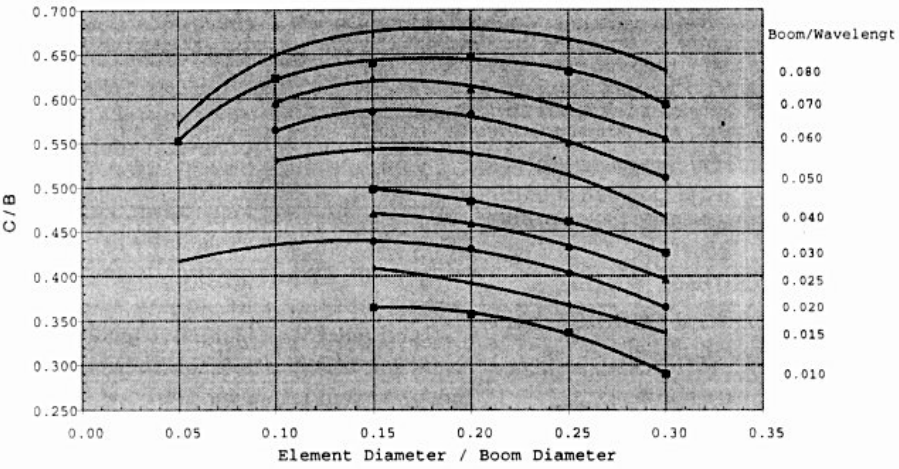

Fig 7. Boom Correction for Elements of Length 0.42 Wavelength. Boom Diameter/Wavelength is marked for each curve.

the boom diameter, but also on element diameter and length. It is reasonable to wonder whether this has any real practical significance when compared with the simpler system of a fixed correction factor at present in use. If the corrections are tapered from larger values for the reflector and longest directors to smaller values for the shorter directors, as suggested, then the effect of using a single fixed correction is to apply a correction which is too small for the longest elements and too big for the shortest ones.

This can easily be simulated in an antenna analysis program such as YO6 by adding the fixed correction to every element and then subtracting the tapered corrections. Such simulations lead to the conclusion that at 144MHz the difference between the two approaches is negligible; this is not at all surprising since the corrections are a small fraction of the element lengths. At 432MHz small differences are apparent but do not appear to be very significant. At 1296MHz however, the fixed and tapered corrections differ by considerably more than acceptable construction tolerances. The predicted antenna properties also differ significantly, with some loss of gain when a fixed correction is used, with major differences apparent in the feed impedance. This is consistent with the matching difficulties previously experienced at 1296MHz by some amateurs.

Several local amateurs have now constructed long yagis for 1296MHz using the VK2KU tapered corrections, and in each case have reported that matching the yagi proved quite straightforward.

Conclusions

The raw data graphs such as Figures 2-4 appear to show unequivocally that boom corrections depend not only on the boom diameter (as a fraction of wavelength), but also on element diameter and element length. The dependence on element diameter may not be much of a surprise, but the dependence on element length appears to be a novel idea that was initially unexpected.

The formula for calculating the negative reactance contributed by the boom-element combination (Guy's Rule) is also new, but it fits the experimental data very well. This rule is the key to calculating boom corrections for any combination of boom and element diameter. It may well be that the use of a different computer program for finding element impedance would lead to somewhat different values for the negative inductance contributed by the boom, and hence to slightly different constants in the formula. However when the procedure is reversed and the same program is used to find the corrections in other situations, such differences between programs should largely be eliminated. In effect the computer modelling is used to interpolate between boom correction factors which were found directly by experiment. Thus the author believes that the graphical results as presented in Figure 7 are substantially independent of the computer modelling, and represent a close approximation to the truth.

The length dependence of the corrections appears to be best described by a power law of index 1.8, though this value does not seem to be very critical.

The fixed boom corrections at present in use extend up to a boom diameter of 0.055λ. The experiments described in this article extend this range up to 0.070, and calculations have been carried out up to 0.080λ, thus covering the important range of booms thicker than 12mm at 1296MHz.

Acknowledgments

I would particularly like to thank Gordon McDonald VK2ZAB and Ian White G3SEK for their encouragement and advice. They willingly assisted in a project that threatened to get out of hand, growing rapidly from a planned single measurement at 1296MHz into a comprehensive survey over 3 frequency bands, 3 boom diameters and 5 element diameters.

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Appendix - Seven Simple Steps

1. Calculate the wavelength in mm from
   $\lambda = 299792.5/f$
   where f is in MHz.
   [e.g. f = 1296.2MHz, λ = 231.3mm]
2. Choose a boom diameter B and element diameter d, both in mm.
   [e.g. B = 16.2mm, d = 3.18mm]
3. Calculate the ratios (B/λ) and (d/B).
   [B/λ = 0.070, d/B = 0.196]
4. Refer to Figure 7, draw a vertical line corresponding to the value of d/B, and read off the value of C/B from the appropriate curve - interpolate between the curves as necessary.
   [C/B = 0.645]
5. Calculate C (in mm) from C/B by multiplying by B. This is in fact the Boom Correction for an element of length equal to the Standard Length L_0.
   [C_0 = 10.4mm]
6. Calculate the Standard Length L_0 from $L_0 = 0.42\lambda$.
   [L_0 = 97.1mm].
7. Calculate the Correction C for any element of length L from
   $(C/C_0) = (L/L_0)^{1.8}$.
   [e.g. for L = 90.0mm, C = 9.1mm]

Beginners Page

Workshop Time

by Terry Sexton

Submitted by Drew Diamond VK3XU from an article he found in the "Journal" of the Melbourne Society of Model & Experimental Engineers.

TIME - where do you get it? You steal it of course! You sneak out when no one is looking and put in a few minutes in your shop. You plan your jobs inside other peoples' time or while you are commuting, walking the dog or under the shower. Stolen fruit is always sweeter!

HOW long does a project take? Minimum time, because you plan the stages, come up with an estimate and stay focussed on the project until it is finished.

We all have our methods. I remember how one of our recently deceased members used to put in a minimum of one hour per day in his shop. When he missed a couple of days, that meant finding three hours shop time at the next session. His 'one hour' was simply a door opener; he always got carried away and lapsed into working overtime anyway.

Now you might reckon that one hour per day would hardly achieve much? Wrong, because 365 hours per year comes to 9, five-day, forty hour working weeks. I reckon that forty five days spent in any decent sort of workshop should yield something worthwhile. The last time that I saw Media Industry figures, they showed that every Australian man woman and child watched 1200 hours of TV per year (3 hours and 17 minutes per day all year round). We are not average and we don't know anyone in that survey but most of us watch some TV.

That one hour per day in your shop can easily he wasted. Starting new projects before you finish the one you are on; or fiddling about procrastinating while the clock is ticking won't achieve anything for that end of year exhibition night. By staying focussed on the job in hand and avoiding interruptions you can achieve a great deal in a given time.

Equipment

Selection and utilisation are important. Most of us select what we can both afford and justify owning. Very few of us fully utilise the equipment we have.

Some very fine models have been built on primitive equipment, yet there are owners of modern lathes and turret mills who never produce anything at all.

Drew Diamond practising what the article suggests — so that's how he gets so much done

Projects

Selecting just one project from the vast quantity of published designs is a task that many people never come to terms with. Others of course start every published design they come across and never finish anything. I'm very wary when it comes to collecting old restorable items. The temptation is to keep on collecting and neglect the restoration, so you finish up snowed under with junk. Eventually the workshop becomes unusable because you are up to your armpits in stuff that smart people knew was worthless when they got rid of it.

That Aimless Attitude

The ABC recently ran a program on MEN & THEIR SHEDS'. While most of us found it amusing and thought provoking, it did highlight the fact that many "shed men' are perfectly happy doing nothing worthwhile in their workshops and sheds. All except one chap on that program exhibited a total lack of goals to work toward. That aimless attitude is fine with me as long as there has been no outlay on tools and equipment. We all have a few power tools but once a lathe appears on the scene, serious metal cutting is in order. Installation of a milling machine usually follows and should widen the scope of work being tackled, if not, why not? When you think about it, the addition of some welding gear to that lot improves the potential output of a shop enormously. And what do most owners of such goodies produce? Nothing but second-rate excuses!

According to the armchair brigade, it is supposed to take time, money and willpower to complete a project in the workshop. Take it from me, you can get away without the money and you can steal the time. Given the willpower, dedication and some careful planning, you will complete all sorts of projects in a very short time. The best way to improve your range of skills is to tackle and finish off projects. Don't jump in at the deep end; start off with simple projects. Keep working on your skills and steadily increase the degree of difficulty.

The more challenging a project at the start, the more rewarding it is when finished.

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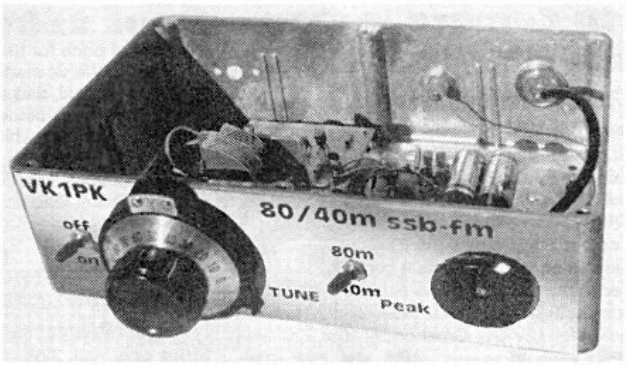

Photo 1. The VK1PK converter box.

Do you often miss your favourite net or WIA broadcast because you are doing things outside? Would you like to keep in touch with amateur activity when in the garden, next door or fixing the car? Or, do you have problems remembering when your sched begins?

IF SO, THIS PROJECT is for you. It is a simple direct conversion receiver connected to an FM wireless microphone. With it, you can monitor amateur activity on your car radio, stereo system, walkman or any other FM broadcast receiver. You could even use a clock radio set to allow reception of a particular frequency at a particular time.

This unusual project should also appeal to beginners. Most of the circuitry is in a readily-available kit that takes less than 30 minutes to assemble. The remainder of the project consists of two simple modules built on printed circuit boards.

As described, the project tunes the most popular part of the 40 metre SSB segment. However, just two component changes are required to add coverage of a segment of 80 metres.

Circuit Description

The block diagram (Fig 1) shows how it all fits together. The product detector mixes the incoming signal with the second harmonic from the local oscillator. The output from the product detector, which is a low-level audio signal, modulates the wireless microphone. The incoming signal can then be heard on any FM broadcast receiver tuned to the wireless microphone's transmitting frequency. Though the local oscillator could be made into a free-running VFO for full band coverage, a ceramic resonator oscillator was used here for simplicity combined with good frequency stability. Figure 2 shows the schematic diagram for the project.

Construction

The unit comprises three modules. These are:

- Bandpass filter/Product detector
- Local oscillator
- FM wireless microphone (kit)

All modules are assembled on separate printed circuit boards. The wireless microphone kit is supplied with its own PC board. The boards for the other modules are simple to make because only discrete components are used.

Assemble the FM wireless microphone kit as per the instructions supplied. Check that it works, set it to an unused frequency and put it to one side.

Next etch the circuit boards for the Bandpass Filter/Product Detector and Local Oscillator modules. This is done as follows:

1. Cut the two boards to size with a hacksaw or similar.
2. File the edges to remove burrs.
3. Clean the copper surfaces with sandpaper.
4. Cover the parts of the copper that need to be retained with pieces of PVC insulating tape. Fig 3 shows the etching patterns for both boards.
5. Place the boards in an etching bath. Follow the safety instructions on the etchant's packet or bottle. Do not remove the board until all exposed copper has been removed.
6. Wash the boards in soapy water and remove the tape.
7. Drill holes for all component leads. A 1 mm drill bit can be used.

The component placements for both boards are shown in Fig 4. Conventional PC board mounting is used; ie components are mounted above the board, component leads pass through the holes drilled and are soldered to the copper pads.

Build the local oscillator on the larger board. Check that it works by locating its signal on a receiver that covers 3.5 MHz. Note the frequencies covered when the variable capacitor is adjusted.

A range of 3.510 to 3.590 MHz was obtained in the prototype circuit. This corresponds to a coverage of 7.020 to 7.180 MHz on 40 metres. The bandspread was remarkably linear over this range. Your unit may cover different frequencies - component values, trimmer settings (on the tuning capacitor) and tolerances all affect tuning range. The ceramic resonator used is also a factor - the brown/yellow type sold by Vorlac (and used in the

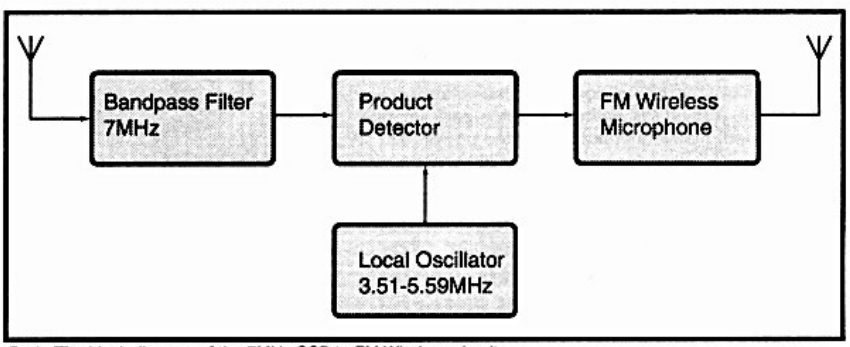

fig 1. The block diagram of the 7MHz SSB to FM Wireless circuit

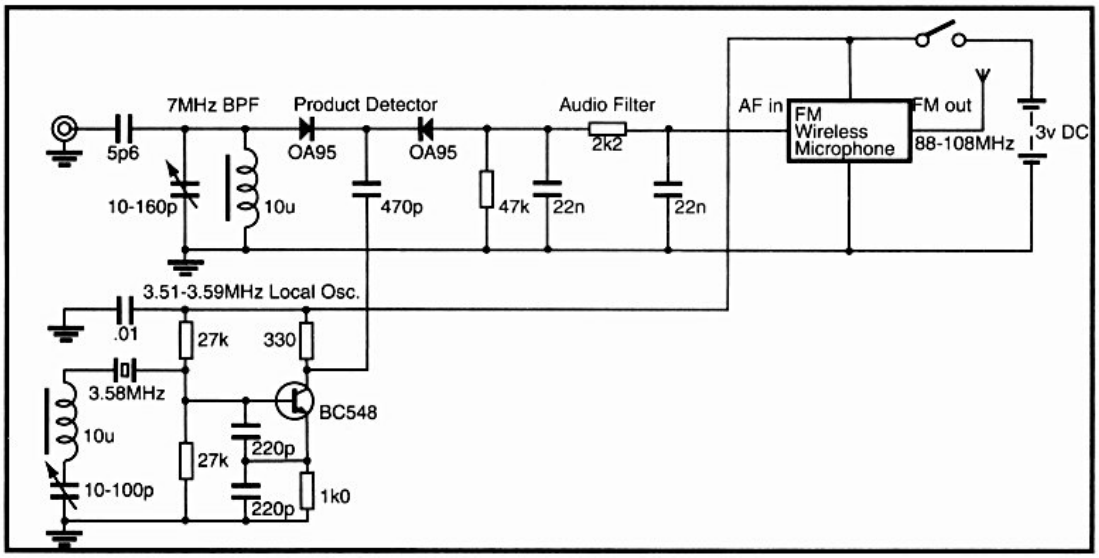

fig 2. The circuit diagram for the converter. Note that all of the local oscillator components are on the large PCB.

prototype) can be pulled low in frequency with small capacitance values, but the blue type (as stocked by RS Components) requires higher capacitance values to reach these same frequencies. The use of two ceramic resonators in parallel, though desirable for other reasons (Reference 1), may also affect the frequencies covered.

Component values need to be altered if the tuning range of your unit is not satisfactory. Try reducing the value of the 220 pF capacitors if the frequencies covered are too low. Conversely, increase these values for greater coverage of lower frequencies. Wiring up both gangs of the oscillator variable capacitor in parallel and/or placing a small inductance in series with the ceramic resonator (several µH normally required) are other ways to pull the oscillator's frequency down. Do not overlook the effect of any trimmers on the tuning capacitor; these particularly affect coverage at the top end of the tuning range.

After the oscillator has been made to cover a satisfactory tuning range, assemble the product detector on the smaller board. Construction should be straightforward. If you have TV or broadcast stations nearby it might be a good idea to use miniature coaxial cable (eg RG-174) between the local oscillator and the product detector to prevent pick-up of VHF/UHF signals. Ensure that the connections to the variable capacitor are correct; this project uses the 160 pF larger section only.

The output of the product detector is wired to the audio input of the wireless microphone. This is done by disconnecting the electret microphone (and the resistor that supplies it with a DC bias) and wiring the output of the product detector to the non-grounded audio input terminal. This connection allows the wireless microphone to transmit the received audio from the product detector.

All boards are mounted in a die cast aluminium case. There are several ways to anchor the circuit boards to the bottom of the box. The author used a large piece of printed circuit board material screwed to the inside bottom of the box. Printed circuit board pins were then used as spacers between this board and each of the three circuit boards. Solder both ends of each circuit board pin to assure rigidity and good connections.

The wireless microphone used in the prototype is powered by two N-type cells that are mounted on the kit's circuit board. It was decided to use these to power the local oscillator, thus eliminating the need for an external supply. Power to the wireless microphone and local oscillator is controlled by a panel-mounted toggle switch. The only other controls on the front panel are the tuning control and the front-end peaking control. Note that some space has been kept for a band switch if it is decided to add 80 metre coverage.

There are only two sockets on the rear panel. These are an SO-239 for the HF receiving antenna and a banana socket for the wireless microphone antenna. This antenna, which is a 75 cm length of wire, is required because of the shielding effect of the case and the need for a noise-free signal at the receiver for best reception.

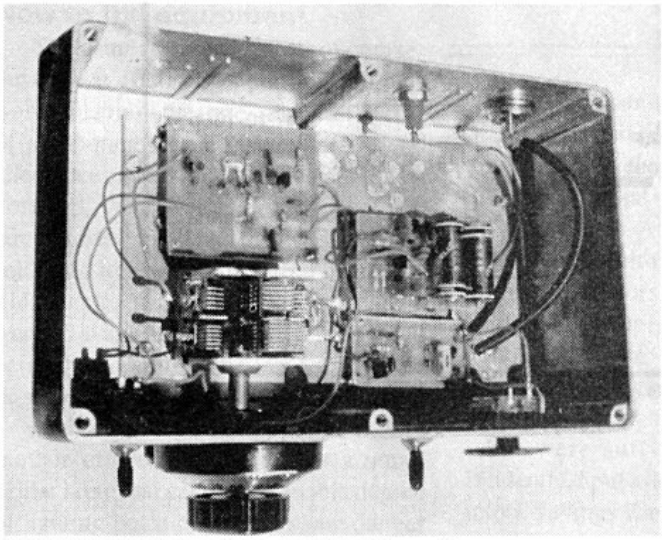

Photo 2. Internal view of the completed Converter

Adding 80 Metre Coverage

As mentioned before, this circuit can be made to operate on 80 metres. This is done by increasing the antenna coupling capacitor from 5.6 to 47 pF and adding a 100 pF fixed capacitor across the input tuned circuit. If the builder is interested in coverage of both bands, a single DPDT switch is all that is required to switch the extra components in or out.

A shortcoming of this approach is that the frequency coverage on 80 metres is insufficient to cover many popular SSB frequencies (above about 3.590 MHz). This can be remedied by using a free-running local oscillator instead, or making some changes to the ceramic resonator oscillator. A ceramic resonator oscillator covering 3.525-3.625 MHz was described in Reference 2.

Operation

Place an FM receiver near the unit and tune it to the wireless microphone's frequency. Connect an antenna and peak the front-end tuning capacitor for most noise. It should be possible to tune in signals by adjusting the vernier dial. If the receiver has a graphic equaliser or tone controls, adjust these for best signal clarity. The completed receiver should be sensitive and stable. Selectivity will be inferior to receivers that include a crystal filter for SSB but should still be adequate for reception of local signals.

Obtaining Parts

Most parts should be obtainable from the usual suppliers. The exceptions are the 3.58 MHz ceramic resonator and the local oscillator variable capacitor.

The ceramic resonator used in the prototype was supplied by Vorlac. Resonators are also stocked by RS Components (Cat no 656-170) and the CW Operators' QRP Club. The author has a number of resonators available to readers on receipt of a stamped, self-addressed envelope.

This project uses two variable capacitors. The front-end peaking control is an ordinary plastic dielectric type from an old transistor radio. Use the 160 pF section ('G' and 'A' connections). The local oscillator capacitor can be either a plastic type or an air-spaced unit. The latter usually has the advantage of a longer shaft to which a vernier reduction drive can be coupled. The maximum value is not particularly critical, but it will determine the frequencies that the receiver will tune.

The vernier drive, though not essential, makes the receiver easier to tune. It is available from Dick Smith (Cat No P7170 or P-7172). The FM wireless microphone kit used in the prototype is catalogue number K-5006. A number of similar kits are available. Choose a sensitive unit with a separate microphone amplifier stage to assure sufficient transmitted audio.

All other parts should be readily obtainable from any good electronics store.

References

1. Searle K, Ceramic Resonators on 3.5 MHz, Lo-Key, June 1997, p 24.
2. Parker P, Receive SSB on your Short-wave AM Radio, Amateur Radio, October 1997, p 8.

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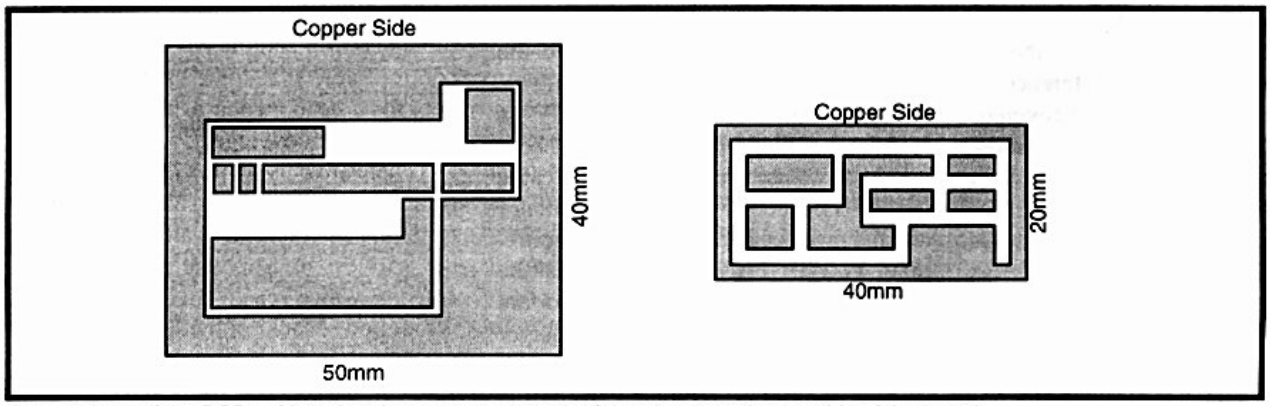

fig 3. Layout of the PCBs - Note that the copper pattern is shown here on the top side of the board.

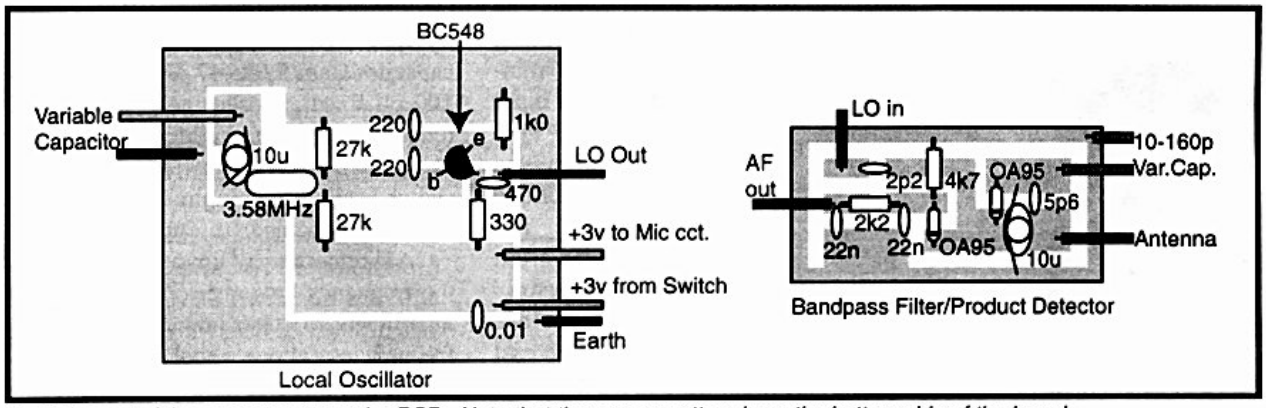

fig 4. Layout of the components on the PCB - Note that the copper pattern is on the bottom side of the board.

After fifty years — I still remember

by Eric Jamieson VK5LP

It was something of a culture shock returning home after four years in the RAAF, to find that in 1946 we were still in the era of kerosene lamps for lighting and using horses for farm work - nothing had changed since I enlisted in 1942. While those living in towns generally were supplied with mains power, their poor cousins living in small provincial towns and on farms were denied that privilege.

MY TIME IN the RAAF had been spent on stations where 240 volt AC power was available, in fact, its provision was taken as a matter of course.

Having spent four years servicing receivers and transmitters in aircraft and on receiving and transmitting stations, I was not about to give it all away and do something else.

During the latter half of 1946, a room/shack was built on the end of the garage, lined with a tar-based material (not malthoid) to prevent moisture condensation dripping from the roof during periods of severe winter frosts, common to the Adelaide Hills. A large window provided much needed light (with a blind for privacy at night) and, the door included a half panel of beaded glass to allow in further daylight. A wooden floor, benches, shelves and a large cupboard all made for a good start.

Now to the equipment

The mandatory multimeter of course, but only at 1000 ohms per volt, all that was available at the time, so some loading of components could be expected and allowances made for the voltage readings obtained. A University brand valve and circuit tester; I still had the pre-war small soldering iron which had been heated by a blowlamp; this would have to do as there were no available alternatives. It was well before the era of Scope irons that could be powered from accumulators.

Lighting at night was a problem. My mother offered me the use of a small Miller lamp that gave a reasonable degree of lighting but it presented some danger as it could be easily knocked over, especially if caught by a cable. This was placed on a shelf for special occasions, perhaps when entertaining visitors to the shack, but for other times I had to settle for a hurricane lantern! They were never renowned for their light output but at least were safe to use.

For cold weather I had a kerosene heater, for hot days air-conditioning was achieved by opening the window. I was fortunate that a sycamore tree shaded the shack during summer afternoons.

For cold weather I had a kerosene heater, for hot days air-conditioning was achieved by opening the window. I was fortunate that a sycamore tree shaded the shack during summer afternoons.

To keep initial costs to a minimum I drew extensively on the stocks of ex-military material sold by The Waltham Trading Co in Adelaide. All sizes of resistors, capacitors, valves and sockets, tuning capacitors and other "goodies" were sold cheaply, but the quality was good.

My farm wages were not high — they never are when you work for your father - but were sufficient to sustain me. Prudently, I put aside one pound per week into a Savings Bank Account that paid a few percent interest. This was my nest egg that gradually grew to the extent that I was finally able to front-up to the counter at Gerard and Goodman Ltd, not far from Waltham's. Here I could purchase more modern components but at a higher price.

In late 1946 I fulfilled a long held ambition. Wait for it! I constructed a battery-operated communications receiver using two-volt valves, powered from an accumulator and three 45-volt heavy-duty B batteries. It consisted of two tuned RF stages, a mixer with separate oscillator, three IF stages at 455 kHz, dual diode valve for detector and delayed **AVC,** audio driver, phase changer and push-pull output of two watts. In addition there was a stabilised **BFO,** a noise silencer, 100 kHz marker generator and an S meter.

The dial was similar to the excellent dial used in AR7 receivers, but tuned from 0 to 600 rather than the 0 to 500 of the AR7 dial. It had a very smooth slow motion movement. Frequency read-out was achieved using a series of graphs which I had plotted using a Bendix 221 frequency meter of wartime vintage, plus the 100 kHz calibrator. It was a somewhat cumbersome process but it worked.

There were 15 valves in all and the tuning range was from 550 kHz to 30 MHz in six switched bands. The band switch was 12 inches or 30 cm long as the various RCS coils were mounted end to end, for efficiency and isolation. The IF stages were unique in that back-to-back IF transformers were used between each stage. These were top coupled to give a flat but narrow top bandwidth with steep sides, making the receiver very selective but easy to tune. The receiver performed very well, although the 1C7G mixer was struggling a bit at 30 MHz! It was remarkably stable. A heavy-duty eight-inch speaker was mounted in a separate box.

The receiver was enclosed in a steel cabinet a little larger than the dimensions of an AR7 receiver. This communications

receiver continued in service after the arrival of power, except that the B batteries were replaced by a suitable AC power supply providing about 150 volts. It was finally put aside around 1954 when I purchased the first of several AR7 receivers. Reluctantly, I eventually sold it to a shortwave listener who lived out "in the sticks" somewhere in Western Australia. I often wonder what became of it - surely no other receiver with similar specifications existed anywhere.

Following the construction of this receiver, I used some of my little spare time to repair the battery operated radios on local farms, or the AC radios in the towns. The small charges I levied went into the nest egg. To repair the AC radios I used a 60 watt 240 volt soldering iron. On the farms I placed a small copper-head iron in the kitchen stove or fireplace; often overheating it and necessitating re-tinning of the tip. A block of Sal Ammoniac was very useful as the overheated tip could be pushed into the block, cooling and cleaning the tip ready for the application of tinning solder.

My mode of transport was by motor cycle. I strapped a large kit bag to the rear parcel carrier (which was in the place where a pillion passenger would normally ride). In the bag I carried the multimeter, sundry spare valves, small components, light gauge wire, soldering irons and solder, a torch and tools. All rested on a piece of folded blanket in an effort to protect the equipment from the rough roads I needed to negotiate - we didn't have the luxury of bitumen roads in those days, not in the country anyway.

By word of mouth, it soon became known that I was capable of repairing the district radios, obviating the need to take them to Adelaide. One modification I made to many battery sets was to increase the coupling between the aerial and grid windings of the aerial coil, by adding several extra turns to the earth end of the aerial winding, finishing the extra turns close to the grid winding. At the expense of some selectivity, there was a considerable increase in the performance from 5AD, which satisfied customers. This simple modification brought me many new customers.

As I toured the country, the most common question asked was: "When do you think we will have power?". Of course, I could only guess and my usual reply was that it could be five or six years.

IN 1949 I JOINED my father and uncle to form a deputation to wait on The Premier, Mr (later Sir) Thomas Playford to see if the arrival of power could be accelerated from the four to five years quoted by The Electricity Trust of SA. After all, we were only 25 miles (40 km) from Adelaide. Mr Playford said he "would look into the matter", to the point that we had power by January 1951 instead of 1953. It seemed in this case that the old adage – it's not what you know but who you know - that can achieve results. I am sure it did for our community.

Throughout the years of World War II, I had continued to subscribe to two magazines, *"Radio and Hobbies"* which today is *"Electronics Australia"* and The *"Australasian Radio World"* which ceased publication in the early 1950s. As each monthly publication arrived, my parents dutifully stacked the magazines separately in my room. On my return there was much reading to keep me occupied.

As I toured the country, the most common question asked was: "When do you think we will have power?". Of course, I could only guess and my usual reply was that it could be five or six years

I did note that in the January 1946 issue of *Australasian Radio World* that Kingsley Radio Pty Ltd in Melbourne (the manufacturers of that popular wartime receiver the AR7), began advertising and describing a new "Ferrotune tuning unit" they had developed. It took the place of the usual ganged tuning capacitor and associated coils. The "Ferrotune" unit allowed for a straight-line tuning dial from end to end over its tuning range of 540 to 1650 KCs (kHz), obviating the crowding effect at the high frequency end of the dial when used with the usual tuning gang. Each revolution of the tuning knob equalled 100 KCs (kHz), each unit being aligned and tracked during manufacture.

Through 1946 and 1947 a number of articles appeared in the magazine together with circuit diagrams for the three different tuning units they were manufacturing. The KFT1 was for a standard 4-valve receiver using a 6J8G, 6U7G, 6G8G and 6V6G. The KFT2 was for a two valve "Reinartz" type receiver using a 6J7G and a 6V6G, while the KFT3 was a three valve receiver using a 6J8G, EBF35 and a EL3NG. In each case a 5Y3G rectifier was used. The KFT1 tuning unit was also suitable for use with battery operated converter valves such as the 1C7G and 1A7GT, so it was in fact, a very versatile unit.

In addition, Homecrafts Pty Ltd in Melbourne were providing a kit for the three models; the KFT1 sold retail for 12 guineas (£12/12/- or $25.20), KFT2 for 9 guineas (£9/9/- or $18.90) and the KFT3 for 10 guineas (£10/10/- or $21.00).

Each kit came with a pre-drilled and cut cadmium plated chassis, tuning unit with dial and escutcheon, IF transformers where appropriate and a six inch Kingsley speaker. In addition, suitable polished wooden cabinets were available for each model, complete with speaker grille and only requiring the space for the dial to be cut from the cabinet and three holes for the controls.

That complex mind of mine kept coming up with the question - why can't I build some special sets that would have immediate local appeal? They could operate from batteries while we waited for the arrival of AC power, then switched over to AC operation at the appropriate time.

From Homecrafts in Melbourne I obtained a kit for the KFT1 model which was AC operated, plus a cabinet. Well protected, it arrived in the post and had an immediate appeal to me. I noted I would need a power transformer, valves and the small bits and pieces, together with the associated wiring, power lead etc.

From Gerard and Goodman Ltd I obtained a Trimax transformer with a 290-volt centre-tapped secondary winding. The rectifier valve was changed from a 5Y3G to a 6X5GT, as its slow warm-up

meant that high voltage was not applied until all valves were drawing current, hence protecting the electrolytic filter capacitors. To know the final cost of such a receiver, I purchased all the required parts from there, arriving at a figure just under £20 or $40 including the kit. Therefore, I believed that I could retail the AC sets for £40 ($80), with additional cost for those requiring a six volt vibrator or B batteries.* The 6-volt accumulator became the responsibility of the purchaser.

The final figures were: AC only version £40; AC and vibrator/battery model £52 ($104), the latter cost also including a special changeover switch to move from AC to vibrator or battery as required. The switch was special in that it required that each mode of operation entered an "off" stage before entering the next mode.

During the early part of 1948, my father installed a 32-volt lighting plant and I was commissioned to wire the house and sheds for lights and power. My shack now had electric light and power for a 32-volt soldering iron. I also constructed a 32-volt inverter that gave me 240 volts AC power, so at last I was able to use 32 volts while I waited for the power.

As I was about to launch into the business of radio construction, I thought it wise to be licensed by the ARTS&P organisation, which covered patent rights to parts used. I think the cost was about £1 ($2) per unit; for this fee I was supplied with a numbered Decal transfer which was applied to the rear of each chassis as it was completed.

BY MID 1948 I was ready. I had constructed a prototype of each model, so I ran a slide at the local picture theatre with details of the proposed receiver stating that orders would be fulfilled in strict rotation. Each set would be constructed in response to the needs of the customer.

There was an immediate response, especially from the people on the farms. They saw the advantage of a modern set that could continue to be operated on batteries, but switched over to AC when the power arrived. Orders for five multi-function sets were received the next day! I explained that there would be delays because the sets would need to be constructed, but the local people accepted that situation - they could not buy a similar receiver from any other source, so really I had a cornered market!

There was little demand for the Reinartz set, two only being sold. The same applied to the KFT3. It performed almost as well as the KFT1 but people seemed to be of the opinion that an extra valve was good value. The RF circuitry was the same as the KFT1. The main difference was that one of the diodes of the 6G8G was used to drive the EL3NG. It did this quite well, as the valve only required a negative bias of six volts that allowed it to be driven quite easily in Class A.

In my spare time I could turn out better than one KFT1 set per week. During a fortnight's holiday I averaged close to one set a day, producing a total of 12 sets in that period! The soldering iron and screwdrivers were working overtime.

Realising that it would be difficult to deliver mantle radios using a motor cycle, in 1948 I purchased a 1928 model Morris Cowley buckboard. It was somewhat dated but reliable and served its purpose well. The precious radios travelled to customers beside me on the seat.

For the straight AC models the valves used were 6J8G converter, 6U7G IF amplifier, 6G8G detector, AVC and audio driver, 6V6G audio output and 6X5GT rectifier. The multi-function sets used a 6D8G, 6S7G, 6T7G, 6G6G and 6X5GT respectively. In this model, the four main valves each consumed 0.15 amps heater current and the 6X5GT heater only came on when connected to the AC. The 0.15 amp valves were chosen to keep battery drain to a minimum, while the 6G6G output was an adequate 1-watt. All the valves could be purchased new from the Waltham Trading Co as ex-wartime supplies. They were about one-third the cost of those available from Gerard and Goodman and equal in performance. This assisted in keeping the price reasonable.

The Kingsley KFT1 tuning unit was designed around the 6J8G and an output of 455 KCs (kHz) to which the supplied IF transformers were exactly factory matched, only a tweak being required to compensate for lead length etc. I used the suggested Kingsley circuit that was modern and straightforward.

One change I made was to include a 40 ohm resistor in the negative high tension lead, the resulting voltage drop

being applied to the AVC line to provide a small delay voltage so that the AVC began working when a certain signal level was reached. This was useful for any country weak signal conditions.

Negative feedback to improve the audio response was provided by a voltage divider across the primary of the output transformer, with the voltage fed back to the plate of the driver stage.

Several special models were created. One customer required more and better audio power, so he received a console model with a 12 inch speaker and push-pull 6A3 triode valves to provide about 7 watts of high fidelity output. The extra valves were accommodated on a sub-chassis that also mounted the larger power transformer. He was quite happy to pay £100 for it to operate from 240 volts AC.

Difficult reception areas were covered by leaving the Ferrotune kits and building separate radios on another chassis that boasted a tuned RF stage in one case, two IF stages as well. In those days 5AD on 1310 kHz was a weak signal in the country. Many people wanted to listen to that station so their needs were satisfied. The larger sets were all dual-wave models using a pre-designed coil assembly made either by Aegis or RCS.

Eventually, for my own use I built another special. This was based on the KFT1 kit but the output stage was a direct coupled 6A3 valve. To achieve this the power transformer cutout (Chassis opening) was enlarged to accommodate a 385-volt centre-tapped transformer. Despite the small cabinet size the audio quality was noticeably superior to the standard 6V6G. This was assisted by replacing the normal six-inch speaker with a heavy-duty model, there being just sufficient clearance to accommodate the larger magnet. The set remained largely unused until the power arrived.

During the period a total of 64 radios were constructed and sold. The 65th kit I still have in its original package as it arrived in the post!

IN 1949, THROUGH the local school committee, I received an order from the Education Department to supply a radio for use in the school. With the request came a long list of specifications that had to be met. As the design of the standard receiver incorporated many of their requirements, those which were additional I considered unreasonable:

- provision for the use of a long or short aerial - this idea was discarded in the 1930s when tuned-radio-frequency (TRF) and Reinartz type radios disappeared in favour of super-heterodyne receivers.
- provision for use of headphones — why in a school room?
- three year warranty - normal warranty was one year.
- should not draw more than 100 watts from the mains - it would be a large set which would draw that much power.
- all valves to be enclosed in metal cans - output valves and rectifiers are never screened - they become too hot anyway.
- an indicator light to show that the power was connected - I thought the dial lights were sufficient.

There were several other equally ridiculous requirements. I informed the department that my standard set was adequate for the school, but if they wanted these extras the price of the radio would double to £80. They accepted the standard model!

Installed in 1949 this radio was still working well when the school closed in 1968. During that time it had been used every school day and had required no service. I felt that its faultless performance for nearly 20 years had vindicated my stand on the unnecessary requirements.

A lull in demand occurred around 1950 when immediate demands had been satisfied. Four sets were constructed and placed to one side for eventual sale.

With the arrival of the mains supply in January 1951, production of these receivers ceased in 1952, after I became the local agent for a large range of receivers provided by Philips Electrical Industries.

During the period a total of 64 radios were constructed and sold. The 65th kit I still have in its original package as it arrived in the post! At times I have contemplated constructing it to a working model, but so far time has eluded me. In later years, one of the multi-purpose sets came back to me as a trade-in on a Philips radio, so I have saved this for my own interest. After 50 years, it remains in good working order, with the original valves!

So ended a short but interestingly productive period of my life, details of which are not widely known outside the local community at the time.

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Preserving our Pictorial History

Will McGhie
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Colour original inserted

Our History

For Christmas I bought myself a 35mm slide scanner and have been scanning old photos of family and friends non-stop for a few weeks. The results from even poor faded slides and negatives have been exceptional. This started a thought, "*What about amateur radio history in Australia from a photographic point of view?*" There must be thousands of photographs in all sorts of formats lying around forgotten and fading away. Not only fading but being lost and misplaced. I know from enquiries about VK6 historical information how quickly people forget who had what last and just what it was that we had anyway.

My thoughts are to scan in as many photographs as possible, that are significant to amateur radio in Australia. It could be a big job if large numbers of photographs are found, but the intention is to tackle the job over a long time. Digitising a few (5?) each week is not a big effort, but at the end of a year some 250 photographs would have been stored for future historians.

How To Do It

I have the equipment to scan all photograph types. Negatives and slides provide the best quality and are the preferred image source. However negatives are usually the first to be lost or discarded and much of what will be found will be photographic prints. The most important part of the process is finding the information about the photograph. There is no point in having a photograph if you don't know what you are looking at, who the people are, or when the photo was taken; so the number one requirement is to gain information about the photograph. This information would be attached to the photograph. If you have the digital copy you have the information about the photograph right along side it. Programs such as Adobe Photoshop allow the information to be stored as a part of the image file.

What Is History?

So what qualifies an image to become a part of photographic history of amateur radio in Australia? For a start, history is anything that happened prior to today. Historical photographs don't have to be old but just have to tell a small story about amateur radio on a particular day. Photographs of repeater sites, beacon sites, Hamfests, meetings, field days, amateurs of particular note and so on; the list is a long one.

Recently, due to having purchased the slide scanner, I started going through my collection of 35mm slides. Some of them I had completely forgotten about and they included a hundred or more of the construction phase of one of our repeater sites some 17 years ago; Tic Hill near Perth. The repeater site project was a large one that involved perhaps 40 amateurs and friends and family over many months. The slides were a trip down memory lane.

I have included a couple that reproduced well in greyscale. In particular the person wielding the axe was one of the first to strike a blow in clearing the hill top site. His name is Kevin, unsure of his callsign. The amateur on the concrete vibrator is Trevor VK6MS.

Format

What file format should a collection of digitised images take? If this project is worth doing, it does require a good understanding of digital photography and how the end result meets our expectations. Here is some background information for those of you who are new to digital photography.

The image is scanned into a computer like a television image, but can be stored in a number of file formats. Why are there so many different formats if they are just a means of storing the digital image? Some formats were copyright so new program writers developed different file formats. They all basically did the same thing, they just did it differently, like Beta and VHS tape formats. However this is not the complete story, as high quality colour photographs, when converted to a digital file, take up a lot of storage space. To store all the information that can be extracted from a colour 35mm slide the file size would be a hundred megabytes.

Compression

To greatly reduce the size of the resulting file, less information is recorded and the data is compressed. File reductions of a hundred or more are possible on some photographs with little loss of detail. Areas of a photograph that are the same, such as blue sky, don't have to be recorded bit by bit. It can be saved as a block of area of a particular shade of blue. The final size of the file depends on many factors, one of which is the content of the photograph. A photo that is mostly one colour will be much smaller than one with lots of detail.

The most widely used file format for storing compressed photographs is called JPEG, named after the organisation that standardised the format (Joint Photographic Experts Group). On older systems JPEG is often abbreviated further to the file extension (.JPG).

JPG files can be saved in varying degrees of compression. Medium levels of compression give excellent results, with file sizes of between 20k and 200k. The actual file size depends on several factors, such as the number of colours or

Colour original inserted

greyscale levels, the resolution that the photograph was scanned at, in dots per inch (DPI) and the detail in the photograph.

Another widely used compression format is GIF. GIF is best suited for graphics that contain 256 colours or less, or greyscale. GIF can produce very small file sizes of images with just two colours, black and white. It is therefore popular for graphics on the Internet.

A format commonly used for images in the printing industry is the TIFF format. While file sizes are usually much larger than JPEG files the quality of the reproduced image is also much better and there is less degradation of the image in handling –loading, editing and saving. Images should be created and edited in TIFF and finally saved in JPEG for storage.

Why So Many Colours?

In 1801 Sir Thomas Young showed that our eyes have three sets of receivers (known as receptors), Red, Green and Blue that are each capable of recognising minute differences in signal strength. The three colours are known as the primary colours of light. Colour therefore is a combination of these three colours in various strengths. If each colour receptor can recognise a thousand levels of light then the number of colours would be 1000x1000x1000. However, as good as the eye is, it is able to adjust to and recognise images from colours that are nearly correct. Just look at a row of televisions in a retail store and compare the range of colours that we humans are willing to accept as OK.

Colour original inserted

And The Winner Is...

As you can see, my opinion is that JPG is the format to use. JPEG not only saves colour and greyscale photographs well, but is also the main file form used on the Internet for digital photographic images. A high quality image can be saved onto a computer hard disk or CD-ROM and a lower quality smaller file size saved for distribution via the Internet or floppy disk.

Presentation

There is no purpose in saving our amateur radio photographic history if we can't all gain access to it. My primary interest is to make digital images available for viewing on a computer screen. JPEG images saved onto a CD-ROM can be readily shared and loaded onto Internet sites. Also in reference to presentation, the Internet is by far the best and cheapest way for large numbers of amateurs and others to see the photographic collection on a week by week basis as it grows. However file sizes over about 100k are not a good idea on the Internet as they take much longer to load from the web site.

The solution is to digitise the original at a high resolution and then make a low resolution version available on the Internet. Don't feel left out if you are not on the Internet. The growing collection would be made available by a variety of means such as floppy disk and CD-ROM.

Interested?

What I'm looking for at this stage is expressions of interest. Do photographs about *Amateur Radio* in Australia exist that could represent our history, and are we interested in the project as described? Your comments please.

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CLUB NEWS

Send your club news and events to Club News

Melbourne Packet Radio Group Inc

YOUR ATTENTION is drawn to the change of meeting nights from the second Monday of the month to the first Thursday of the month at 1930 hours at the Moorabbin and District Radio Club rooms, Turner Road, Highett in Victoria, (Melways 77 J9). All are welcome. Enquiries should be addressed to MPRGi, PO Box 299, St Albans, Vic. 3021 or via packet to MPRGCM@VK3BBS.#MEL.VIC.AUS.OC

During the last couple of months we have prepared a submission to the other clubs in the Melbourne area seeking their financial support for the implementation of our own permanent gateway. Although prepared very close to Christmas we have already gratefully received donations from MDRC, a solid commitment from a second club and individual donations from Gerry, VK3MQ and Matt, VK3JNJ. We will have been in touch with the remaining clubs by the time you read this and hope to get the new facility up and running soon. In the meantime Peter, VK3AVE is still providing a part time service using his own ISP.

In the last couple of weeks work has been carried out on the VK3RPK site at Red Hill. This work was to rectify a transmitter problem on the 144.8 MHz 1200 baud port and to install a new 1200-baud port on 53.025 MHz. There is also a 9600-baud port on 434.2 MHz. Our appreciation for the funding of the 6-metre equipment goes to the members of the Moorabbin and District Radio Club.

Don't forget, the meeting nights have been changed, the March meeting is on Thursday the 4th. 73.

Urunga Convention – the longest running annual convention in Australia

THE EASTER WEEKEND will see Urunga host the 51st convention celebrating the 50th birthday of the event. The convention was started when a passing comment took root and flourished into an annual convention and foxhunt competition. Crieff VK2XO, Peter VK2PA, Col VK2 ASF and Gill VK2SH were crossing a lagoon on an oyster punt, which probably is a great place to think other thoughts, when the suggestion came up. A group of local amateurs all agreed to camp in the DO-ME boat shed for the weekend and enjoy each other's company. So many fellow amateurs turned up that a second boat shed had to be occupied as well.

So what is there to do at the Urunga Convention? Well apart from the socialising, which I must say has been very well recommended to me, they hold an annual foxhunt, even awarding a trophy to the winner, the Jack Gerard Memorial Award. There is a smorgasbord at the Ocean View Hotel in Urunga on Saturday night featuring a display of old gear and home brew equipment. From memory all of my home brew equipment is old gear.

Foxhunt proceedings begin on Saturday at 10:00am with a 7 MHz mobile event. Except for one more 7 MHz event on Sunday, the remainder of the events are on 2 metres. Try your hand at the 7 MHz pedestrian mobile foxhunt. The rules call for transistor radios only for this event and I can't imagine why as I'm sure that nobody uses valve gear pedestrian mobile anyway. Call-in will be on 146.5 MHz simplex. All up it sounds like a great weekend for all. If you have any questions or want to know more about accomodation call Brian Slarke VK2ZCQ after 8:00pm on (02) 6655 1115.

Grand opening

REDCLIFFE RADIO CLUB, arguably SouthEast Queenslands most active, is christening its new clubhouse Saturday, March 13 on the Corner of Klingner Road & MacFarlane Street, Kippa-Ring from 10.00am to whenever. Book an indoor site, bring a table, or sell your excess shack equipment from the boot of your car. This is an excellent opportunity for an informal get-together and a chat. There will be a Sausage Sizzle, a working Radio Shack complete with HF, VHF, UHF, Packet and with a bit of luck ATV (we are still working on that). It should prove to be a great day where you can bring your family and friends. Make a day of it and come to see Redcliffe as well. Tell me if you're coming and we'll reserve a place for you. Phone Kevin - VK4AKI on (07) 3880 1112.

Gold Coast Amateur Radio Society

THE CLUB HAS re-introduced its technical hour, 1 hour before the Friday night meetings. Fire off all those "techo" type questions that have had you stumped! (Now that's an idea worth pinching!) Gold Coasts AGM will be held March 12th, at which ALL positions will be declared vacant and a brand new committee elected.

Hervey Bay

AMATEUR RADIO'S Buy/Sell/Swap Day - April 3 1999. Hervey Bay Amateur Radio Club will host the day at the well equipped club house, Dayman Park, Urangan and invite all Amateurs and Clubs from near and far to participate. A $4:00 BBQ will cap off the day.

FNNQARGT!

A REMINDER that this years Far North and North Queensland Amateur Radio Get Together will be held at Beachcomber Coconut Village, South Mission Beach, from Friday Afternoon 11th to Monday 14th June 1999. All Welcome!

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BARGAINS

Get in quick and grab a bargain! These ex-demo Yaesu transceivers may have a few minor marks or scratches, but you'll save a fortune. Two-year warranty applies but stocks are strictly limited.

FT-51R 2m/70cm hand-held

The FT-51R uses a sculpted case and diecast rear panel for strength, and dual microprocessor control for ease of use. At just 57 x 123 x 26.5mm (W.H.D) including NiCad battery pack, it's comfortable to hold or clip in a pocket. Includes inbuilt "Spectrum Scope", scrolling text help messages, and power-saving MOSFET amplifiers.

Features:

- Tx 144-148, 430-450MHz
- Rx 118-174, 420-470MHz
- 2m RF Output: 2.0, 1.5, 0.5, 0.02W
- 70cm RF Output: 1.5, 0.5, 0.02W
- Twin VFOs per band
- 120 memory channels
- Dual-band & dual in-band receive facilities (VHF/VHF, VHF/UHF, UHF/UHF)
- DTMF Paging and Messaging
- Large illuminated LCD screen
- Auto battery saver, Auto battery off
- CTCSS encode/decode
- Australian version selectable Auto repeater shift
- Includes FNB-31 600mA/H NiCad, belt clip, AC charger, CA-9 charging stand and high efficiency antenna.

$599 **SAVE $100**

LIMITED STOCK

2 YEAR WARRANTY

CD-2 mobile fast charger

A fast NiCad charger and mobile cradle assembly to suit the FT-11R and FT-51R handheld transceivers. Uses a regulated switched-mode charging circuit for cool operation and light weight. Reverts to trickle charging once the battery is fully charged. Includes cigarette lighter lead.

D 3628

20 PIECES ONLY

2 YEAR WARRANTY

$49.95 **WAY BELOW COST!**

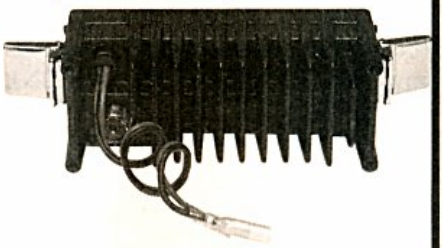
FL-2025 2m 25W Amp

Turn your FT-290II into a powerful mobile/base transceiver with this bolt-on RF amplifier. Replacing the FBA-8 battery holder on the FT-290RII, it boosts transceiver output to 25 watts. Requires 13.8V DC.

D 2863

LAST FEW UNITS

$199 **SAVE $100**



Battery packs to suit FT-11R and FT-51R

FBA-14 dry cell case	D 3626	**$19.95**	
FNB-35 7.5V 900mAH NiCad	D 3624	**$59.95**	SAVE $40
FNB-33 4.8V 1200mAH NiCad	D 3623	**$69.95**	SAVE $30
FNB-38 9.6V 600mAH NiCad	D 3625	**$79.95**	SAVE $37

FT-290RII 2m all-mode transportable

Covers 144-148MHz and features FM, SSB (USB/LSB), & CW operation with 2.5W or 250mW switchable output power, twin VFOs and 10 memories that store mode and simplex or repeater frequencies. Selectable tuning rates are also provided for SSB/CW and FM (SSB- 25Hz/100Hz/ 2.5kHz and 100kHz; FM-5/10/20kHz and 1MHz). Mode specific features include a noise blanker and clarifier control for SSB/CW, plus a full set of functions for FM repeater operation, making this unit very simple to operate. It comes with a flexible rubber antenna, an FBA-8 battery holder which takes 9 x C size batteries (standard or NiCad) and a hand-held microphone.

D 2875

YAESU

LIMITED STOCK

2 YEAR WARRANTY

$699 **SAVE $200**

Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling.

Wide-band coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at 2:1 SWR. An optional 30m resonator kit can be installed without affecting operation of other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability.

At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

D 4920

$449 HUSTLER

30m Resonator Kit

Adds 30m coverage to the 5BTV and includes all hardware.

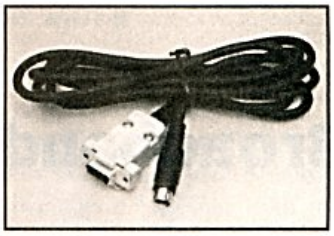
D 4921 **$99.95**

BONUS OFFER! Purchase the 30m-resonator (D 4921) with the 5BTV vertical and pay only half price for the 30m resonator!

BARGAINS

Advanced Data Management Software

An advanced way to program many of the functions of Yaesu handheld and mobile transceivers. Each package consists of an interface that plugs into the serial port of a PC and connects to the transceiver via its microphone socket (for handhelds) or its Packet socket (for mobiles). Also provides easy-to-use 3.5"(inch) PC software with pull down menus that allow for programming and naming of memory channels, selection of output power, CTCSS tones, scan and battery saver operation, plus much more.



ADMS-1D suits FT-10, 11R, 50R/RD, 51R, VX-1R D 3753
ADMS-2D suits FT-3000M, 8000R, 8500, 8100R D 3759

$89.95 ea

LP-1300 Log Periodic Yagi

The Maldol LP-1300 is a Log Periodic Yagi beam antenna designed to provide useful gain across the 100 to 1300MHz range. Ideal for scanner enthusiasts and ham operators needing a directional wideband antenna. Consists of a 17-element Yagi with a special feed system providing low SWR (less than 2.0:1) across the 100-1300MHz range.

Gain:	6.0dBi to 10.0dBi	**Max wind speed:**	40m/sec
Boom length:	1.46m	**Max power:**	500W
Suitable mast:	28-60mm diameter	**Connector:**	SO-239

D 4828

$269

FT-50RD 2m/70cm Handheld

The Yaesu FT-50RD is an amazingly compact 2m/70cm amateur band handheld transceiver which provides MIL-STD 810 shock and vibration resistance, super wideband receiver coverage, simple menu settings for most functions, and compatibility with the optional Yaesu ADMS-1D software/interface package for PC programming of many functions.

Other features include:

- Tx 144-148MHz, 430 - 450MHz
- Rx 76-200, 300 - 540, 590 - 999MHz (cellular blocked)
- FTT-12 keypad provides Digital Voice Recording, CTCSS/DCS scanning, and CTCSS encode/decode
- 2m/70cm RF output: 2.5, 1.0, 0.1W standard, up to 5W with 9.6V battery or 12V DC socket
- "Omni-glow" LCD screen for easier night-time viewing
- 112 memory channels with 4 character alpha naming
- Dual watch allows monitoring of sub-band activity
- Direct FM modulation for better audio quality
- 5 battery saving systems (includes Rx and Tx Save)
- Comes with FNB-40 slimline 6V 650mA/H Nicad battery pack, flexible 2m/70cm antenna and modified M-9626 AC plugpack adaptor for Nicad charging

D 3660

YAESU

2 YEAR WARRANTY

$569

BONUS!

Pay only half-price for a second Nicad pack when purchased with the FT-50RD. Limit one per customer. Applies to FNB-40, 41, 42 only.

FT-8100R 2m/70cm Mobile

The stunning new Yaesu FT-8100R is a state-of-the-art 2m/70cm band mobile transceiver that combines high power and the industry's most versatile memory system with an excellent wideband receiver and solid construction. Its US MIL-STD-810 shock and vibration rating is your assurance of years of reliable operation. Includes hand mic, mounting bracket and fused DC power cord.

YAESU

Other features include:

- 198 memory channels
- 1200/9600 baud packet socket
- Inbuilt antenna duplexer
- Inbuilt crossband repeater facility
- Dual receive capability (VHF/UHF, VHF/VHF, UHF/UHF)
- Optional removable front panel

Frequency range: Tx 144-148MHz, 430-450MHz
Rx 110-550MHz, 750-1330MHz (less cellular)

Output power: 2m: 50W, 20W, 5W
70cm: 35, 20, 5W

2 YEAR WARRANTY D 3314

$949

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B 3761

TECHNICAL ABSTRACTS

Gil Sones VK3AUI
30 Moore Street
Box Hill South Vic 3128

Broadband Level Meter

A NEW INTEGRATED circuit logarithmic amplifier from Analog Devices provides greater than an 80-dB range with a 500 MHz bandwidth. The internal amplifiers in the IC are actually 900 MHz devices. The IC is the AD8307. Applications for this device have appeared in both Electronics World and in CQ DL.

In Electronics World November 1998 Ian Hickman described a simple, wide-range, field strength meter. This may be of interest and the magazine is readily available as it is distributed widely.

In CQ DL January 1999 Jorgen Missun DF5HF described a broadband level meter using the AD8307.

The block diagram of the AD8307 is shown in Fig 1. The circuit of the level meter is shown in Fig 2.

The meter uses a 50-microamp meter and can display a linear scale of over 80 dB. The bandwidth is to some degree dependent on construction but with careful construction 500 MHz bandwidth is achievable.

The circuit has two adjustments and some degree of interaction could be expected. Trimpot P2 is set so that a 0-dBm signal in 50 ohms gives a meter reading of 40 microamps. Trimpot P1 is then adjusted so that a -40 dBm signal in 50 ohms gives a reading of 20 microamps. The scale extends from below 10 microamps, for a -60 dBm input, to a FSD of 50 microamps for a +20dBm signal. The bottom end of the scale is lost in noise and the roll off in the logarithmic output. The 80 dB plus range is a very good performance. The setup can be carried out at 10 MHz and should hold with good accuracy and linearity through the HF and VHF bands with 432 MHz thrown in. From 10 microamps to 50 microamps the meter scale corresponds to 10 dB per 5 microamps of scale.

The integrated circuit should be available locally either from a local agent or from one of the larger parts suppliers to the more professional end of the market.

Fig 1. AD8307 Integrated Circuit Internal Block Diagram.

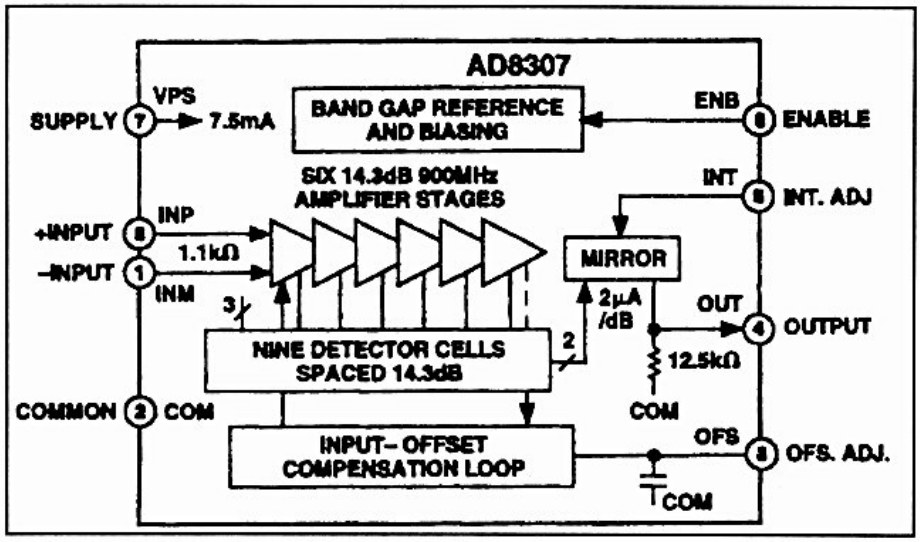
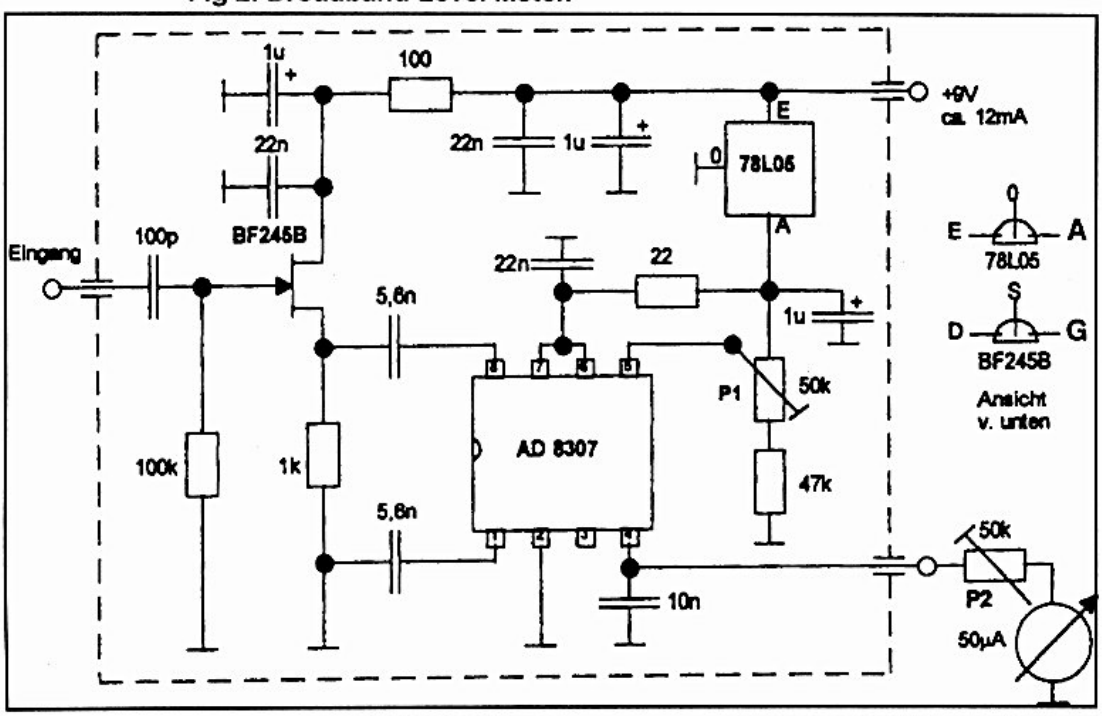


Fig 2. Broadband Level Meter.



High Performance Regenerative Receiver

The regenerative receiver is capable of good performance with a relatively small number of parts.

RECENTLY THERE HAVE been a number of designs for regenerative receivers published in a variety of publications.

In QEX Nov/Dec 1998 Charles Kitchin N1TEV presented an overview of regenerative receivers together with some practical circuits. He presented a high performance shortwave receiver which may be of interest.

The receiver is built in a wooden box so as to minimise loading of the tuned circuit.

The panel may be metal to minimise hand capacity effects or you can use earthed metal plates between a wooden panel and the tuning capacitor frames.

The circuitry components were mounted on a small piece of strip board or you could use a small piece of printed circuit laminate.

Plug-in coils were used and these were of the type familiar to older readers. The formers are available in the USA from a supplier called Antique Wireless Supply. They would appear to be approximately 1 1/4 inch diameter or about 30 mm in diameter and have a valve type base to plug into a 5 pin valve socket.

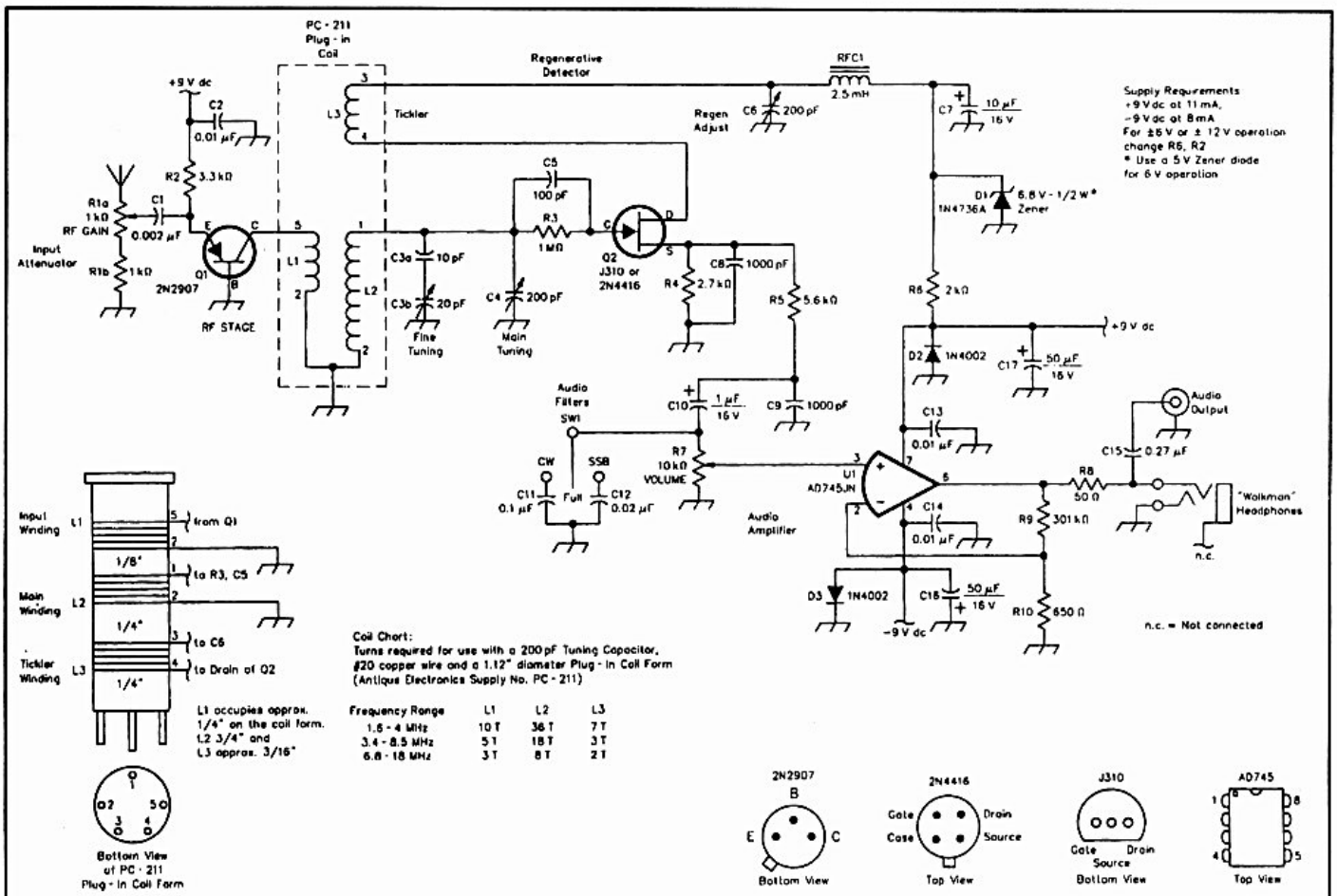
A reduction drive should be used for the main tuning capacitor and reduction drives may also be convenient for both the fine tune capacitor and the regeneration capacitor. Large knobs are advisable to give ease of adjustment.

The circuit is shown in Fig 3. The AD745 audio amplifier is used because it provides high gain together with low noise.

A zener diode is used to provide regulated supply voltage to the regenerative detector so as to provide some extra stability of the operating point.

The source of the coil formers was the Antique Wireless Supply PO box 27468 Tempe AZ. The USA phone number is 602 820 5411 and the URL is http://www.tubesandmore.co.

This company would appear to be able to supply a range of parts for older style radios.



Soft Starting

Soft starting is a way of turning on a mains supply gradually so as to avoid stress on components due to a sudden voltage or current surge.

SOFT STARTING is often incorporated in valve linear amplifiers that may suffer from the sudden application of the full mains voltage at switch on. Some suitable soft start circuits were presented by Ian White G3SEK in his In Practice column in the December 1998 issue of RadCom.

The circuits are shown in Fig 4. Fig 4(a) is a relay delay circuit where the main supply is initially applied through a series resistor to limit the current.

After a time set by the operation of the relay the limiting resistor is shorted out and the full mains supply is applied. However the relay circuit dissipates an appreciable amount of power.

The circuit of Fig 4(b) uses an auxiliary supply to drive the relay timer circuit. This complicates the circuit. By using tappings on the main transformer the circuit of Fig 4(c) reduces the dissipation in the relay circuit and uses feedback to assist with the delay. R2 should be adjusted on test and 200 ohms at 2 watts is a good starting point.

A further refinement is a fuse or PTC to provide protection in the starting phase of operation.

A PTC is a device which is normally low resistance but will go high resistance if excessive current flows. The PTC will recover when the overload is removed. PTC devices are sold by a number of suppliers under a variety of trade names.

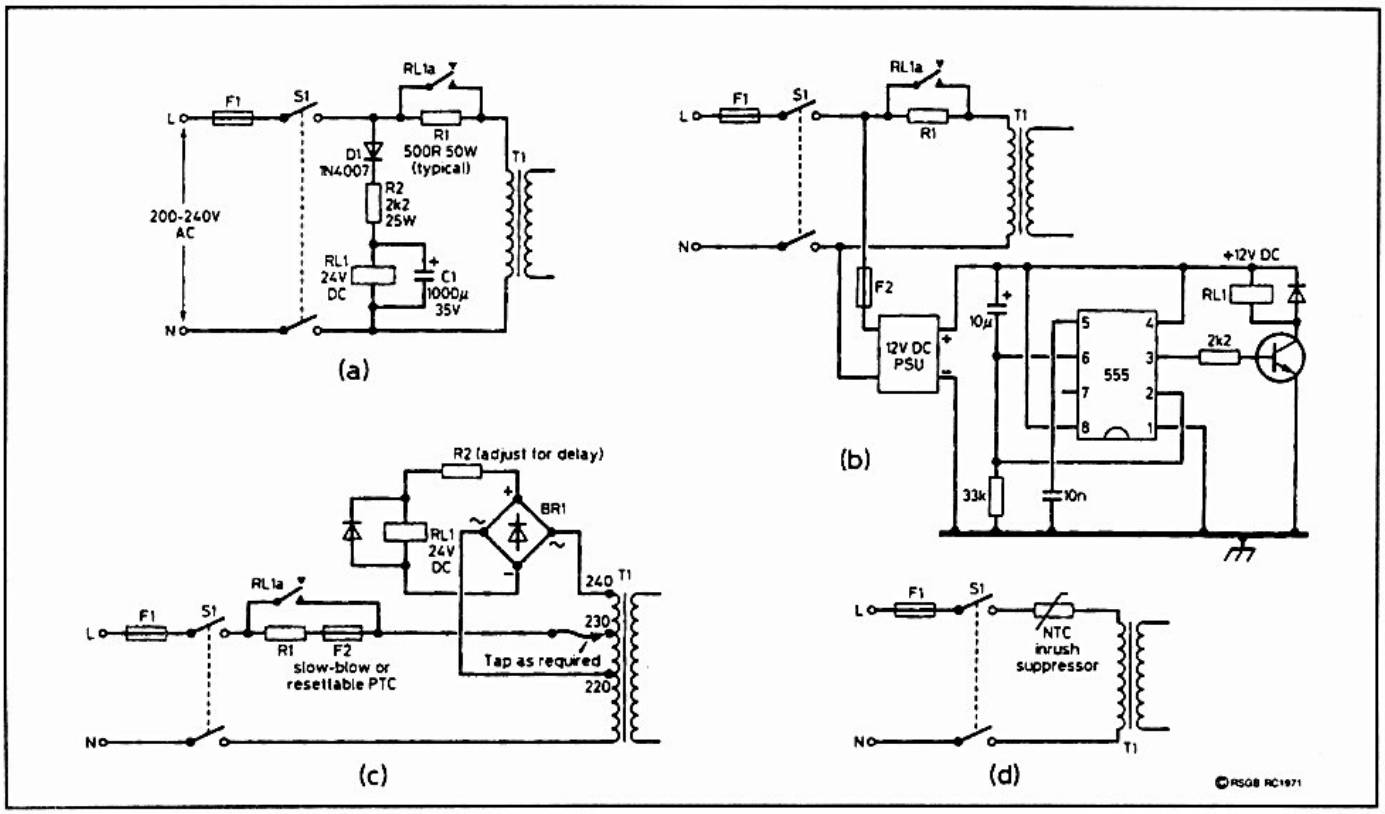
A simple circuit that uses a NTC device is shown at Fig 4(d). NTC devices are sold by a number of suppliers. An NTC has a high resistance when cold which falls to a low resistance when the device has warmed up to its operating temperature.

They are often used to protect lamp filaments.

Both NTC and PTC devices must be sized to the particular application. The original article suggested both RS Components and Farnell as sources for these components.

ar

Fig 4. Soft Start Circuits.



ERRATUM

Correction to article "Narrowband Voice Transmission" in January 1999 edition of *Amateur Radio*, page 18, 3rd column, lines 6 - 9: "Output components are removed from the modulator below 600Hz by a low-pass filter". The author Lloyd Butler VK5BR apologises for the description "low-pass". It should read "high-pass".

AWARDS

John Kelleher VK3DP
Federal Awards Officer
4 Brook Crescent, Box Hill South, Vic 3128 (03) 9889 8393

YU1LW Joca Stojkov, recent recipient of Wavkca, Cert. No 2131

DURING THE WEEK, I received a letter from an interested Amateur requesting information on the number and kind of awards that I can effectively handle. The answer is easy. I have pleasure in processing all those listed as Federal Awards, plus, when requested, some overseas awards. These are WAC and WAS. Awards sponsored by CQ Magazine can be handled by either VK5IE or VK3AKK. New Zealand awards are handled by the NZART Awards Manager ZL3GX at 7 Dellow Place, Christchurch 8002 NZ. All others are dealt with by their respective sponsors or listed Clubs or Managers.

If you have a particular award on which information is required, and I have that information to hand, then I would be pleased to publish your request. Here are some that have been requested.

Worked Republic of India Award.

Issued by the Amateur Radio Society of India for contacting stations in India, the Laccadive Islands, and the Andaman and Nicobar Islands on 1.8 to 28.0 MHz (including WARC bands) on CW, AM, SSB or RTTY since 26th January 1950. A minimum of 100 points is needed. QSO's with mainland India on 1.8 MHz =3, on 3.5 and 7 MHz = 2, and on 14.0 to 28.0 MHz =1. Contacts with stations using special prefixes count an additional point. With Laccadive and Andaman the points value is 5 on 1.8 Mhz, 4 on 3.5 and 7.0 MHz, and 3 on other bands. GCR list and 5 IRCs to: -

Awards Manager
Amateur Radio Society of India
40 Ghalib Apts.
Parwana Road
Pitamoura, Delhi 110034 India.

Worked the Equator Award (WTEA) from Indonesia.

Issued for confirmed contacts with stations along the Earth's Equator, in the following countries: C2 HC HC8 HK KH1/KB6 PR-PY PY0 (P&P Rocks) S9 (Sao Thome) T30 T31 T32 TN TR YB5 YB7 YB8 5X 6O 8O 9O. Swl OK. Three categories of the award are as follows: -

Class 1- confirmed contacts/ swl with 15 above countries.
Class 2- confirmed contacts/ swl with 12 above countries.
Class 3- confirmed contacts/ swl with 8 above countries.

For all classes, YB5 YB7 and YB8 are mandatory. GCR list and fee of US $8.00 or 16 IRCs go to: -

Biro Nugraha ORARI Pusat
PO Box 1002
Jakarta 10010 Indonesia.

Worked All Indonesia Award...WAIA

Issued for contact with stations in each of the Indonesian call areas (1 to 0) as follows: -

—DX stations other than those in CQ Zone 28 need two stations in each area.
—DX stations in Zone 28 require three stations in each call area.

Additionally, they need contact with three stations YB YC and YD in the same call area.

Modes or bands may be mixed. SWL OK. Contacts after 7th September 1968. GCR list and $8US or 16 IRCs to:

Mr. M Maruto YB0TK,
PO Box 6763-JKSRB
Jakarta 12067 Indonesia

Cork Radio Club DX Award.

Make contacts with members of the Cork Radio Club, or EI stations in County Cork. EI/ G needs 4, rest of Europe 3, and outside Europe 2 QSOs. Any band, any mode. SWL OK. GCR list and $4US or 8 IRCs to: -

W. O'Reilly EI8AU
Mount Oval
Rochestown Co. Cork Ireland

Worked EI Counties Award.

Work or hear at least 20 of the following counties after 1st January 1982:

Carlow, Dublin, Laois, Mayo, Sligo, Wicklow, Cavan, Galway, Leitrim, Meath, Tipperary, Clare, Kerry, Limerick, Monaghan, Waterford, Cork, Kildare, Longford, Offaly, Westmeath, Donegal, Kilkenny, Louth, Roscommon, Wexford

Look for the rarer Irish counties to be activated each St. Patrick's Day (17th March) by the IRTS. Amateurs with an Irish ancestry can join IRTS as honorary members. SASE to W2ORA for details. GCR list and 10 IRCs to:

IRTS Awards Manager
Box 462
Dublin 9 Ireland

Worked All African Continent Award (Italy)

The Award is a dark coloured plate (15 X 20cm) showing the African continent. Receive confirmations from at least 40 African DX countries since 1st January 1980. SSB CW RTTY or mixed modes on all bands except WARC. SWL OK. Fee is $US15.00 or 20 IRCs. GCR list and photocopies of both sides of your QSL's. You must include statement that all QSO's were worked from your own QTH and that you followed all applicable rules of your country. Apply to: -

Guiseppe Acquaviva IK7NXM
PO Box 57
Canosa di Puglia BA
I-70053 Italy

73, and best DX
De John, VK3DP.

ar

ARDF

Ron Graham VK4BRG
PO Box 323 Sarina Qld 4737

Emergency beacons or EPIRBs send out a signal that is automatically picked up by commercial aircraft. Each time the pilots return to that frequency, the intrusive signal is heard.

You can imagine the frustration in high places (30,000 feet *and* in Canberra) when an EPIRB goes off accidently and cannot be found.

Don't ask a policeman, ask a radio amateur

I REFERRED PREVIOUSLY in this column (AR May and Oct '98) to possible amateur operator involvement in helping authorities to locate activated emergency beacons.
Following is a report from Russell, VK3ZQB and Alan, VK3XPD regarding amateur experiences near Portland, Victoria.

Hi Eric,

THIS MIGHT BE of interest for the magazine, as it has hit the local news, generating some good PR for the hobby. The attached news article gives a background to what happened and, to expand on the article, I will tell you how we became involved.

I received a phone call from Mick Owen of the Australian Communications Authority at 0930 UTC, asking if I had the capability to listen to 121.5 MHz. He explained that a Electronic Position Indicating Radio Beacon (EPIRB) had been activated in the Portland region, and the water police were unable to locate it.

This was nearly 12 hours after the initial alert and was only by chance that he contacted me.

Mick received the request from Canberra to track the exact location of the beacon but as he is based in Melbourne, it would be at least a 4 hour drive to get to Portland.

The water police were considering sending the helicopter down with the tracking team but this would also have been very costly. He decided to contact Ian McDonald VK3AXH in Ballarat and Ian suggested that he ring me.

As I was talking to Mick on the phone, Trevor VK5NC called on 2m and I asked Trev if he could monitor 121.5 MHz. He did and heard the EPIRB signal. I briefed Trev on what had happened and he said that they had tracking gear in Mount Gambier that would do the job. Mick said that he would inform the water police that we could do the job and I awaited a phone call from them with the details of what they wanted us to do.

At 0945 UTC Trev VK5NC, Tom VK5EE and Wayne VK5ZX departed Mount Gambier, and I started out from Port Fairy for Portland.

The trip took about 1 hour and we met with Sgt Peter Swiers at Portland where he briefed us on the situation.

Within 10 minutes we had found the beacon and had it turned off. The police were amazed at how fast we found the beacon and wished that they had known that we were available to do the job much earlier in the day.

Faulty beacon found after a 12-hour hunt

POLICE took 12 hours to locate a faulty beacon emitting a signal from a boat safe inside a Portland shed on Saturday.

Sergeant Paul Jensen of Portland police said the signal was first picked up by the sea rescue centre in Canberra at about 10.30 on Saturday morning.

The source of the signal was identified as being in the Nelson Bay area and police searched from the clifftops in vain, he said.

About 5.30pm a plane was sent out but was still unable to locate the source of the signal, he said.

By this stage, police had begun searching boats and shops that sold beacons, hoping to find a faulty one, Sergeant Jensen said.

However, it wasn't until an amateur radio club from Mount Gambier was called in at 10.30pm that the source was identified.

Sergeant Jensen said club members used special equipment to identify the source of the signal within five minutes.

While the SES was notified of the signal, Sergeant Jensen said police had suspected no-one was in danger and so the SES was not called out.

Warrnambool Standard
December 21,1998
Used by permission

We agreed that, at some point in the emergency services standard operating procedures, a notation to use the services of the amateur radio operators, especially when the official service is too far away to be of any use, should be included.

Perhaps the WIA should make some recommendation to the emergency authorities to investigate the inclusion of amateurs for tracking purposes.

They could also compile a national register of amateurs who were equipped for tracking and keep the emergency services informed.

It's worth a thought for if this occasion had been more serious, valuable time would have been lost waiting for equipment to arrive to track the beacon. The Mount Gambier boys were called out again at 6.30 am SA time, by the Mount Gambier police to track another EPIRB that had been accidentally set off in the area. Two calls in one night.

Late note: The Mt.Gambier boys have had three call outs since then. Is this the start of something big or perhaps a business opportunity?

ARDF Coordinator

Jack, VK3WWW, has taken up this position in an acting capacity. This is particularly important as it is necessary to have someone to do the necessary organization/liaison with regard to the Australian team going to Korea in June.

It is hoped that the WIA will soon appoint Jack, or another suitably qualified person, to a permanent position.

Florida

As I write this in late January, my "spy" in Florida reports the presence of "Melbourne, Australia fox hunters" prowling his State! Reports also indicate that some fox hunting competitions took place.

Maybe each side are having some practice for the International events coming up later this year in both Korea and Oregon?

Fox Hunting versus Amateur Radio Direction Finding (ARDF)

When I started this column I tried to point out that I would use the term ARDF in relationship to all facets of Amateur Radio type fox hunting.

I think some reasons may have been to help promote the newer (but more involved) true ARDF activity and that ARDF was easier to type than "fox hunting and ARDF", or even "fox hunting". (Just lazy at typing!).

I will continue to use the term ARDF, but this may be a good time to discuss a few of the differences between the two. In my opinion fox hunting would apply to all amateur radio direction finding type activities that were not actually genuine ARDF, or a variation of ARDF.

Fox hunting is where it all starts. Probably with something simple .. maybe a handy talkie running on low power as a fox ... maybe using handy talkies as receivers ... even without a directional antenna. I would like to discuss some of these simple receive arrangements in a future column. From that simple, and readily available equipment, a Club or a Group may start to investigate more dedicated equipment. Maybe directional antennas for receiving, maybe a simple dedicated fox transmitter and so on. They will no doubt find limitations with that simple equipment and this will, hopefully, inspire them to build or obtain better equipment.

As with most interests or hobbies, as one gets more and more serious, one needs better equipment to try and achieve the results that the "experts" achieve. Rules for, and types of, fox hunts may be many and varied.

Starting with something simple would be my advice — rules may be added if and when required. Various types of fox hunts may be tried, pedestrian, mobile or a combination of the two. Lots of possibilities! With luck, eventually the Group will come up with a type of fox hunt that will suit them.

This need not remain permanent, they may continue to try different ideas and adapt those that appeal. Space does not allow a detailed description of ARDF at this time.

Briefly, it involves contestants on foot finding a series of transmitters (foxes) in the minimum time. ARDF is no doubt for the better equipped and more serious. There are International Rules but, in my opinion, there is nothing wrong with a Group developing their own variations to those rules. As I have tried to point out with the more basic fox hunts, the main thing is to develop ideas, rules and variations to suit your Group, to learn something new and to HAVE FUN.

ar

silent key

King Hussein of Jordan JY1

Below is the text of a letter of condolence sent to the Jordanian Ambassador to Australia from the WIA Federal President, Peter Naish:

14 February 1999

The Ambassador
Embassy of Hashemite Kingdom of Jordan
20 Roebuck Street
RED HILL
ACT, 2603.

Dear Sir,

On behalf of the Radio Amateurs of Australia I offer sincere condolences on the recent death of the revered Jordanian radio amateur operator, JY1.

King Hussein endeared himself to amateur radio enthusiasts throughout the world but particularly here in Australia where very many of my fellow "hams" were privileged to speak with him in two-way contacts. His personal touch and great understanding were much appreciated.

Vale, JY1.

Yours sincerely,

Peter Naish
WIA Federal President

VHF UHF AN EXPANDING WORLD

Eric Jamieson VK5LP
PO Box 169 Meningie South Australia 5264
E-mail: vk5lp@ozemail.com.au Fax: (08) 8575 1777
Packet: VK5LP@VK5WI.#ADL.#SA.AUS.OC

All times are UTC

Those One Metre days

Ken Pincott VK3AFJ writes *"I was pleased to see the material from Max VK3ATK, in the January issue of AR. It inspired me to go looking for my old logbooks, and it saddened me to see how many old friends have become silent keys.*

To add to Max's list, and my logs are nowhere near as neat or complete as his, I can add the following call signs: all VK3s. PO, AAP, ED, TI, AMD, ALY, ZAF, AHN, ZBN, ZDJ, ZDO, ZDU, BU, ZEK and TV. I was not very active during 1956/57, so there could well be others with whom I made no contact.

It has certainly brought back many memories of 288 MHz days, one or two of which are not suitable for publication, but if and when I catch up with the parties concerned, will give them a reminder.

As well as Max, Bert VK3AAF and myself were using 16 element phased arrays. For mobile and portable work I used a 3 element Yagi which I poked through the sunroof of the car. It is to be hoped that other states will be inspired to add their "pioneers" to the list.

Six metres

Steve VK2KFJ forwards these details from Shirow JF6DEA concerning 6m FM activity in Japan. The FM segment is 51.000 to 53.999 MHz in 20 kHz steps. No 6m or 2m FM repeaters - only repeaters on 10m and 70cm and above. The 6m FM calling frequency is 51.000 and most FM is from JA to HL. Shirow has operated the 6m beacon JA6YBR on 50.017 since 1985.

JA beacon changes: JF6DEA advises that the callsign of JA7ZMA on 50.027 has been changed to JE7YNQ. Location and equipment as previously. The beacon also operates on 28.187 MHz.

On 2/2 between 0630 and 1220 the beacons VK8RAS, VK8VF, VK6RSX, VK4ABP and VK7RAE were heard in Japan by JR2HCB, JI1UHZ and JA1RJU. So it seems signals are still crossing the equator.

Rex VK8RH reports having just returned from a trip to Thursday Island on the top of Cape York. Mike VK8ZMA is working there for a few months and they set up a beacon on 52.200 (carrier frequency listen on 52.199 USB) with the ident of VK8ZMA/b. Power is 5 watts and vertical antenna. He would appreciate any reports.

The Christchurch VHF DX Group 28.228 MHz beacon has changed its callsign from ZL3SIX to ZL3TEN. Power is 10w, antenna halfwave vertical. ... **Mike ZL3TIC.**

11/01/99 was a good day for 50 MHz:

0105 W5UWB 5x9 into Christchurch 50.105.

0115 WA5UFH 5x7 50.105. Backscatter into ZL3 from ZL2, ZL4, VK2 and VK3. 0120 55.250 and .260 to 5x9 with NTSC frame buzz. No audio on 59.750. Very strong 45.170 and .240 also 57.240,250 and 260.

0230 VK4DO worked ZL9CI on CW, followed by Ron VK4BRG. At 0303 again worked, this time 5x5. Ron could hear ZL9CI working VK2, VK3 and VK7. 0323 Phil VK5AKK worked ZL9CI on 50.110 5x9.

0324 Bernie VK3YTT and Peter VK3KAI worked ZL9CI.

12/01: A wide-coverage report from **Mike ZL3TIC:**

0005 very strong VKs 46.170,240,57.240,250,260 all 5x9.
0200 ZL9CI 50.110 5x9.
0230 49.750 up to 5x5.
0255 JR2HCB 50.110 5x9.
0400 JF2MBF 50.110 5x9.
0430 49.750 very weak.
0500 VK TV very strong.
0600 JR1RJU 50.130 5x9.
0630 JR6NKZ 50.140 5x9.
0631 JA2IYH 50.110 5x9.
0719 JA4DLP 50.140 5x9.
0730 VK TV 57.240,250,260 69.670,750, 86.250 all 5x9.

0745 FM broadcast band wide open, many Melbourne and Sydney stations 0840 to 1030 6m still wide open, many VKs, mainly VK1,2,3,4.

14/01: from **ZL3TIC** 2216 Worked ZL1ADP. 2230 Very strong VKs. 2330 XE1KK/b 5x8. 2345 49.750 up to 5x9. 2355 ZL3NW worked N6XQ.

15/01: 0105 W6JKB/5 5x5 50.105. 0130 other weak Ws on 50.110 but too weak to copy. 0135 55.260 NTSC video up to 5x9 but no audio on 59.750. 0200 W6JKB/5 still in on CW.

Jack N6XQ will be active from CP (Bolivia) with 500 watts and a medium sized beam antenna from March 17-29. Six metre operating is included. 28.885 will be used for liaison. ... **JA1VOK.**

Steve VK2KFJ supplies more information regarding six metre repeaters:

53.550 VK2RAY Albury, still in the planning/construction stage.
53.550 VK3RMH Melbourne, operational.
53.575 VK3RDD Dandenong, operational.
53.675 VK2RMB Sydney North, off air with a receiver fault.
53.675 VK3RAD Melbourne, planning stages.
53.700 VK2RGN Goulburn, now completed and operational.
53.750 VK5RDX Adelaide South, operational.
53.900 VK3RMS Melbourne East, operational.
53.750 - input 52.750 Wellington NZ, under construction.

Two metres

Rob VK3EK/DEM reported good VHF propagation from Bairnsdale across Bass Strait on the night of 3/1. He worked Andrew VK7XR on 144, 432 and 1296 MHz all 5x9. Andrew went mobile with his HT and they worked 5x5 on low power (250 mW) so the band was really open. On Thursday night (4/1) the VK7 144 and 432 MHz beacons were 5x9.

On 6/1: **ZL3TY** worked VK2ATO 0936 146.550 FM, VK2IJM 1017 144.600 SSB.

New Zealand had a great day on 12/1. **Bob ZL3TY** reports that 148 MHz

pagers audible 0710 then VK1ZQR worked at 0734 on 144.100 MHz, followed by VK3DUT, VK1VP, VK3TET, VK1MP, VK1ZQR, VK3KEG, VK3BRZ, VK2XVJ, VK2EM, VK2ZAB, VK2KU. Pagers faded out 0900.

Mike ZL3TIC provided the following for 12/1:

0745 148.183 MHz pagers 5x9
0752 VK2NWF 146.5 FM 5x9
0753 VK3DUT 144.1 5x9
0810 VK3SF 146.5 5x9
0811 VK3EK 146.5 5x9
0822 VK3DMW 146.8 Very strong repeater, could be heard on reverse
0823 VK3EK 144.1 5x9
0830 VK2KU 144.1 5x9
0833 VK2ZAB 144.1 5x9
0835 VK2CH 146.5 5x9 also about 15 repeaters all 5x9.

Mike said *This 2m opening would be one of the best in ten years. Quite amazing as this season has been so poor up to now!*

12/1: **Ron VK3AFW:** Rob VK3EK worked ZL3TIC and ZL3ADZ on 146.500 FM followed by ZL3TIC, ZL3AIC, ZL2TAL on 144.1 and ZL2TAL on 432 4x1.

DX on 432 via Es is pretty rare, but not unknown. Andrew VK7XR copied transmissions from Adrian VK2FZ/4, on 432 via Es a year or two back.

Many other VK3 stations heard ZL stations and responded but missed out, partly through QRM, partly the fickle Es footprint and perhaps insufficient ERP. Let's hope it's not another ten years before we get a similar opening again.

Bruce VK2EM advises that on 12/1 at 0800 he was scanning the local repeaters when he heard the Greatlakes repeater key up and a voice say, "This is ZL3TY QSYing to 144.100 MHz". Switching his FT-290RII to sideband and 144.100 he found Bob ZL3TY working a VK3. He rang Frank VK2XVJ and both worked Bob for a 5x2 both ways, Frank with 100 watts into a Diamond vertical and Bruce with 3 watts into 30 metres of RG-58 coax and a 6 element vertically polarised Yagi. Five minutes later Bruce worked ZL3AIC for a 4x4 to his 5x5 and then the band died.

13/1: **Gordon VK2ZAB** - At about 0140 the VK5 two metre beacon on Mount Lofty was audible in Sydney area. Liaison with John VK5PO on six metres ensured that calls were made on two metres from both ends but no contact was made.

At 0800 ZL3s were heard on 2m. I had 2m SSB contacts running 25 watts pep with ZL3TY in Greymouth and ZL3TIB, ZL3AIC, ZL3TJZ, ZL3TIC, ZL3ADT and ZL3NW all in the Christchurch area. Signals were S5 to S9 both ways. Guy VK2KU worked all these stations plus ZL2VAL in New Plymouth.

The 2m beacon near Wellington was audible in Sydney but no contacts are known to have been made to the Wellington area.

14/1: **Roger VK5NY** - At 2336 worked VK6KDC at Manjimup 5x5 on 2m. Darrel runs a continuous keyer with 18 watts on 432.105, worth noting, I could not hear the keyer.

15/1: **Phil VK5AKK** - Some very short 2m openings between VK5 and VK4. Worked Des VK4DMI at 0310 5x7 on 144.100. At 0344 contacted Adrian VK2FZ/4 on 144.100, gave him 5x3 but did not receive my report back.

15/1: **Eric VK5LP** - On 144.140 from 2328 worked Darrel VK6KDC at Manjimup 5x8, Wally VK6WG 5x5. 16/1: 0949 VK6WG 5x9 on 144 and 432, 5x3 on 1296. 1030 to 1139 - 144: VK3AEF, VK3WRE/p, VK3ZL, VK3TMP, and VK3FIQ. From 2216 VK3XPD, VK3AEF, VK3ATN. All at various signal levels but mostly good signals. On 432 VK3ZL 5x5, VK3AXH 5x9; 1296 VK5NC 5x5.

16/1: **Wally VK6KZ** - At 2157 worked VK5DK in Mount Gambier on 144 and 432 MHz from Perth and VK5AKK in Adelaide on 144 MHz at 4x1 - hard copy.

Mount Gambier beacons on 144.550 and 432.550 strong. Adelaide beacons not audible. No signs of Geelong beacon or any VK3s.

16/1: **Don VK6HK** - VK5RSE/b 144.550 faded out at 0100 here in Wembley Downs in the Northern suburbs of Perth. Wally VK6KZ and Cec VK6AO also copied Trevor VK5NC on CW on 1296 during the opening but no QSO. Nil heard here.

16/1: **Steve VK5SFA** - worked Wally VK6WG on 144.100 MHz at 0250 5x7. Tried 70cm and 23cm ... no go!

16/1: **Phil VK5AKK** - worked VK6WG 2400 on 144.100, 432.100 and 1296.100.

Ron VK3AFW reports that the weekend of 16-17/1 saw good tropo on 2m and above, covering many points east of Perth, but apparently not getting much further north. A number of VK3s worked various VK6 stations.

Max VK3TMP worked VK6KDC at Manjimup on 2m on Saturday morning 16/1 and Wally VK6WG and also VK6KZ on Sunday morning.

VK3ZL, VK3FIQ and other VK3s also heard working Wally VK6WG on 2m Saturday night. Best contact was Alan VK3XPD to Wally VK6WG on 1296 at 0930. Wally's 10 w was 4x1, Alan's 70 w 5x5 I believe. Congratulations. A few km short of the VK record but a long time since this path was worked on 1296.

Ron's modest log for 14/1 reads.

	1142	VK5DK	5x9
	2106	VK3BMY	5x6-9
16/1:	1026	VK5DK	5x9
	1129	VK6WG	5x7
	1137	VK6WG	5x9
	1207	VK5NY	5x9
	1226	VK5DJ	5x9
	1247	VK5NC	5x9
	2131	VK5NY	5x9
	2145	VK1BG	5x4
	2155	VK7JG	5x9
17/1:	2110	VK7XR	5x9

VK5LP was heard (5x2) working several stations but did not have his beam in my direction while I was listening.

The VK5RSE beacon in Mount Gambier on 2m was very strong for the whole weekend. The VK7RNE beacon was also strong.

Alan VK3AL in South Melbourne shared the excellent tropospheric conditions on 16/1. He was particularly pleased to work Wally VK6WG on 432 MHz for his best DX on that band. His QSO on 2 metres came with signals up to S9. However, tests with VK6WG on 1296 were not successful.

Contacts with Trevor VK5NC and Colin VK5DK, both in Mount Gambier, on 1296 were also very pleasing. He said it was a most exciting evening with very good signals, despite some QSB.

Alan VK3XPD: *On 16/1 at 0930 Wally VK6WG and I gave the current National Record for 23cm a bit of a scare. I was pleased to make it to Wally as he is now nearly 90 years of age and still active.*

I had just completed building a "water-cooled" 2C39 valve amplifier for 23cm. It was delivering about 80-90 watts during tests but the sealed cooling system using distilled water had not been completed so the coolant was normal tap

water in a 4 gallon bucket sitting on a chair - a little risky since the water was "live" at 1300 volts - but only temporarily!

Propagation had been open to VK6 on the mornings of 15-16/1 and several VK3s had worked Darrel VK6KDC at Manjimup but Saturday evening was to be a real propagation "feast".

As the evening progressed and propagation improved, the number of VK3, 5, 6 and 7 stations being heard at my QTH on 2m grew rapidly. There were many VK3 and VK5 contacts on 2m and 70cm into VK6 to Wally at Albany and I believe others. The VK5 boys also worked Wally on 23cm.

Meanwhile, I had been running the 23cm beacon VK3RXX on 1296.530 MHz on the amplifier and beaming west. Trevor VK5NC had commented that the signal was bending his "S" meter from the back of his beam and Joe VK7JG from Launceston also mentioned it was 559 and this was with the beam "side-on" to him in Tassie!

At 0930 Wally VK6WG came on 2m calling CQ and he was 5x9 in Burwood. I responded and suggested he take a look for the VK3RXX 23cm beacon and he played it back to me on 144.150 MHz. A QSO on 1296.150 MHz gave me 5x2 and after a struggle I gave him the disappointing report of 4x1. We had just completed a QSO on 23cm of around 2450 kms - about 3 km short of the current National Record set by Wally with Les VK3ZBJ. Close but not close enough!

Field Day

Alan VK5AR sends a list of his "better contacts" for the field day. He was portable near Kuitpo Forest about 400 meters asl.

0522 144 VK3FIQ 5x5 QF12
0524 144 VK3CY 5x7 QF13
0528 144 VK3AEF 5x5 QF03
0530 432 VK3AEF 3x3 QF03
0623 146 VK5NWH 5x5 PF75
0629 146 VK5KOP 3x3 PF75
0638 439 VK5NWH 5x5 PF75
0642 439 VK5KOP 5x5 PF75
0720 50 VK5XE 5x5 PF96
0722 50 VK6AOM 5x5 OG80
0820 144 VK5NC 5x9 QF02
0837 50 VK4FNQ 5x2 QG39
1014 144 VK3CY 5x9 QF13
1200 432 VK5MC 5x9 QF02
1959 144 VK3WRE 5x8 QF32
2008 144 VK3AEF 5x9 QF03
2011 432 VK3AEF 5x2 QF03
2014 432 VK3WRE 4x1 QF32
2024 144 VK3AXH 5x9 QF12
2025 432 VK3AXH 5x5 QF12
2027 50 VK3AXH 5x5 QF12
2028 50 VK5NC 5x7 QF02
2029 50 VK3WRE 5x3 QF32
2035 50 VK3ATQ 5x2 QF22
2037 144 VK3ATQ 5x3 QF22
2041 144 VK3BJM 4x3 QF33
2048 144 VK3AUU 5x3 QF21
2050 144 VK3XPD 5x5 QF22
2052 144 VK5NC 5x9 QF02
2158 146 VK3SWD 5x9 QF03
2213 144 VK3AL 5x5 QF22
2215 144 VK7JG 5x3 QE38
2221 144 VK3DQW 4x3 QF12
2225 50 VK3DQW 3x3 QF12
2227 144 VK3AFW 5x5 QF22
2240 144 VK3CY 5x9 QF13
2254 144 VK3ATL 5x5 QF21
2259 144 VK3ATN 5x7 QF14
2300 50 VK3ATN 5x7 QF14
2301 50 VK3NA 5x7 QF14
2302 144 VK3NA 5x3 QF14
2309 50 VK3ATL 4x1 QF21

He said, *"I believe that there is no advantage in trying to work these stations during the field day. Two contacts in the SAME locator square on 10 GHz nearly doubled the score of 39 (mainly) difficult contacts on 50 MHz. I am going to think seriously whether I will operate in this contest again with the current rules.*

Alan VK3XPD reported good weather for the Field Day contest on 8-9/

On the evening of Saturday 9/1, Trevor VK5NC, Colin VK5DK with Tom VK5EE providing "support services", all travelled to a point about 30 km west of Mount Gambier while Alan VK3XPD went to his usual spot at Olinda, about 30 km east of Melbourne.

Also participating on 2.4 GHz (as part of the Field Day) were Ralph VK3WRE and Mark VK3TLW who were "perched" near the summit of Mount Skene about 100 km to the north-east. At 1118 they successfully contacted Alan VK3XPD at 5x2 both ways.

While these 2.4 GHz contacts were being conducted, Trevor VK5NC and David VK3XLD, (part of the Geelong contingent operating at Anglesea under the callsign VK3ATL), were attempting a 5.7 GHz contact over about 300 km. David was a welcome newcomer to 5.7 GHz but with only 5 milliwatts available from his recently completed "No Tune Transverter"; this QSO was always going to be tough. David did hear Trevor (with his 6 watts) but unfortunately Trevor could not hear David. David will be building an amplifier very soon.

Later, Colin, Trevor and Tom had a series of QSOs with Alan on 3.4, 5.7 and 10 GHz over an "all land" path of some 420 km.

Initial signals at 1200 were marginal with QSB but built up to a peak of 5x9 as the evening passed and the early morning arrived. These series of QSOs were recorded for the Ross Hull Contest between the hours of 1240 and 1352.

David VK5KK reports: *With the slow start to the tropo season, the National Field Day Contest on 9-10/1 was a golden opportunity to test all the microwave gear. In the end I had 50, 144, 432, 3456 and 10,368. I forgot to take the 1296 transverter and 5760 was found to be non-operational. Out of practice! I did however have my new fold-out tripod tower that will hold two 600 mm dishes plus 144, 432 and 1296 MHz antennas. This was a resounding success (ie. it didn't blow over!). The whole arrangement including antennas packs down to fit in the car boot. Everything successfully ran from one 40 Ah 12-volt battery.*

Arrangements had been made to team up with Alan VK5AR who was near Mount Magnificent, about 60 km SE of Adelaide, as part of the exercise. In the SouthEast, VK5DK, VK5EE and VK5NC were taking microwave gear to Mount Graham. At least some one else was going to have gear within earshot, about 350km!

As I arrived around dusk, the first problem was finding Alan VK5AR. My map for the area was a little vague so some mutual DFing was needed. Regardless, I decided to first set up at a spot near Bald Hill that I had noted from previous surveys to be a good location for microwaves to the SouthEast. Contact was made with VK5DK, VK5EE and VK5NC on 3456.2 and 10368.2 MHz with signals up to 5x9 over the 350-km path.

On 10368.2 MHz I also worked Chris VK5MC who had his portable equipment set up just outside his EME shack, again about a 350-km path. Also worked into central VK3 on 144 and 432. The 432 equipment was simply 2.5 watts from an IC402 into a 9-element beam.

After this round of contacts, I packed up and went looking for Alan VK5AR. In

the pitch black it took about 20 minutes to find him, using the 2m handheld with no antenna to DF him! I set up again and worked the SouthEast crew on 10 GHz for a second round. Alan VK5AR also made use of the 10 GHz equipment. All in all an enjoyable outing!

Microwaves

David VK5KK: *Since early January, I have had almost nightly rag chews on 10 GHz with Keith VK5AKM. Both he and I have 10 GHz set up permanently from home so we just turn it on and talk! To add a bit of challenge to the work we use the Torrens Island Power Station as our "reflector", signals are normally 20 dB over the noise via this path, as we are about 35 km apart; direct path signals are substantial.*

With the ability to rotate dishes at both ends, we have been able to measure Doppler shift on various "moving" reflections. As VK5VF/b is well shielded from here and the direct signal is very weak, reflections with Doppler are much stronger. As the Doppler can be up to a few 100 Hz, it has become an interesting study to judge the quality of a duct and locate larger moving fronts or clouds out a few hundred km with a bit of help from a satellite weather map.

The actual results are still a little vague, as we just tune on SSB to work out the frequency difference between the two signals. Some simple maths will give a velocity. As the object is travelling towards you the frequency shift is always to the high side. It is possible to pick times when a high level duct does exist to the west sufficient to carry the signal to/from a cloud mass or??? well out to sea. As this year has been poor to the west, we just haven't had any really good ducts with which to work!

Alan VK3XPD: *On 30/12/98 at 1230, Russell VK3ZQB at Port Fairy worked on 10 GHz Colin VK5DK and Trevor VK5NC both at Mount Gambier and Chris VK5MC on holidays at Robe. This is a fairly significant series of QSOs because it is not often that four stations are on 10 GHz simultaneously in VK. Signal reports were 5x5, 5x5 and 5x2 respectively.*

In the evening of New Year's Day we noticed propagation building up. The conditions were deemed suitable for 10 GHz so at about 1100 we were all in position. Russell VK3ZQB on the Port Fairy foreshore, Colin VK5DK and Trevor VK5NC on "the mount" at Mount Gambier, Mark VK3TLW and Ralph VK3WRE the summit of Mount Tassie and Alan VK3XPD at Olinda on the south eastern edge of the Dandenong Ranges.

On 10 GHz, the 150-km path from Russell at Port Fairy to Colin and Trevor at Mount Gambier was open with steady 5x9 signals over this relatively short distance. The 250 km path from Alan at Olinda to Russell at Port Fairy yielded similar signals with rapid QSB (within a matter of seconds) from just above the noise floor to 5x9.

The path from Olinda to Mount Gambier of roughly 400 km was very poor in comparison - signals were hovering around the noise floor. No two-way contacts were achieved.

Meanwhile, over at Mount Tassie disaster had struck when Mark's 10 GHz transverter was found to be very "deaf" so it was packed away for a repair job. Ralph had also brought his recently completed 2.4 GHz tranverter and a midnight QSO over roughly 150 km to Olinda yielded a 5x2 report from Alan (not bad for 40 milliwatts into a GridPack) and 5x9 from Ralph. The difference being the 5 watts from Alan's transverter.

Even later that night, Russell VK3ZQB and Roger VK5NY near Mount Wilson in McLaren Vale had a long "rag chew" on 23cm starting at 1230. Signals for this QSO from the home QTHs were a steady 5x8 for most of the time.

Next day in the wee hours of the morning, the phone at Alan's place rang at 2045 (0745 local). It was Trevor again! The 23cm beacon VK3RXX was "in" again at Mount Gambier. At 2100 Alan completed a QSO with Russell on 23cm 5x9 both ways followed almost immediately by QSOs with Colin and Trevor in Mount Gambier, where signal reports were 5x8/5x9 respectively.

As band conditions were so good we went portable again. However by the time we were in place the propagation between Alan at Olinda and Colin west of Mount Gambier had again deteriorated significantly but not before we achieved a QSO on 10 GHz over a distance of some 420 kms. The mediocre reports of 5x1 reflected these poor conditions. This was Colin's first 400 kms plus QSO on 10 GHz. Not unexpectedly, the 10 GHz signals between Russell at Port Fairy and Mount Gambier were 5x9.

The propagation continued into Sunday evening (3/1) when Alan VK3XPD completed seven 23cm QSOs from 0830 until 1200. Alan worked both Joe VK7JG and Andrew VK7XR in Tasmania and five other stations in the Latrobe Valley region of Victoria. These were Rob VK3EK, Ralph VK3WRE, Peter VK3KAI, Brian VK3BBB (1 watt FM) and Mark VK3TLW at Ralph's QTH.

120 GHz Record

Will Jensby W0EOM has claimed a new 120 GHz distance record of 5.3 km with **Bob Johnson KF6KVG.** The CW contact was completed on November 16 in Redwood City, California. The pair has been working on 120 and 144 GHz rigs based on Hughes harmonic mixers and 9-inch Cassegrain fed dishes. They plan further work in the upper microwave bands. ... **W3EP**

Closure

The peak of Cycle 23 approaches and so does the next equinox. In the light of this the following from **Neville Mattick VK2QF** <vk2qf@winsoft.net.au> who says: So the "SF == < 100" 21:00 indices == 99 13 03.

http://www.ips.gov.au/papers/richard/ssnpred.html

April 2000 solar peak, as per above, 1999 equinox to come will yield many interesting chances for station evaluation prior to the peak.

Some interesting data may coincide with this prediction: http://www.winsoft.net.au/~vk2qf/predictn.htm

Need I say more? You should be preparing your six-metre equipment in readiness for those countries you missed last cycle and for new stations that have since appeared.

Closing with two thoughts for the month:

1. **A psychiatrist is a person who invites you to tell everything and then charges you for listening, and**
2. **In a democracy, the votes of the vicious and stupid count, but under any other system they might be running the show.**

73 from The Voice by the Lake.

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A Satellite User's Perspective on the Millennium Bug

I will devote this month's column to a very important issue. How will your computer cope with the transition from 1999 to 2000? As satellite users, a great deal of our software is time dependent and this time-critical element is crucial to the enjoyment of our particular facet of amateur radio.

Volumes have been written on this subject over the past few years but this dissertation from a well-known and respected member of the amateur radio satellite fraternity is directed specifically at you, the satellite user.

The article was downloaded from the AMSAT web site and is reprinted here with the permission of the author.

The Year 2000 Transition:

Your PC and AMSAT Software,

by Roy D. Welch, W0SL

Abstract

As we approach the year 2000, there are some items we need to begin to check out in our computers and the software that is running on them. We need to check that date and time sensitive software will function during and after the transition from December 31, 1999 to January 1, 2000.

The PC Most computer software that uses the current date and time gets that information from the PC operating system. The operating system, DOS, Windows, etc., is just software that disappears when the PC is turned off. From where then, does the operating system get this information? At boot time the operating system is loaded and reads the CMOS Real Time Clock (RTC) which remains running on a backup battery when the PC is powered off.

This RTC is hardware in the PC. The CMOS RTC maintains a two digit year value, so the PC BIOS appends these two digits to a pair of stored century digits making the four digit year value that the operating system obtains. The RTC does not have the century digits and therefore cannot increment them when the year changes from 1999 to 2000. The RTC then just turns over from 99 to 00.

The earlier PC BIOS systems only stored the century value of 19. No one was worried about the year 2000 back then. It was a long way off. Now when the year rolls over from 1999 to 2000 you would logically expect this to cause the programs run in those PCS to think the date is 1900. If the program takes its date input directly from the BIOS, that is what will happen.

However, if the program gets the date from the operating system, it will think the year is 1980. This is because the operating systems that were designed back in 1984 had no need for supplying current dates earlier than the 1980's.

So when the PC boots up with the RTC showing the year 00, the operating system tries to make this 1900, but discovers this is an invalid date and defaults to 1980. How many of you remember booting up one of the older PCs that had a dead ROM backup battery or worse still, no RTC at all? It probably showed the date of April 1, 1980.

Generally, machines that have been manufactured more recently have BIOS systems that have the ability to decide that the century year is either 19 or 20. You might infer that deep in the BIOS there must be some decision tree that says if the year digits are between 80 and 99, for example, the century digits are 19 and if they are between 00 and 79 they are 20. This would mean that all would be OK until 2079.

However, this is not the case. In Windows 95 you can set the date to any year from 1980 through 2099. The next time you boot up, the date is remembered, that is if your PC is "Year 2000 (Y2K) compliant."

The Tests

Your PC will be "Y2K compliant" if:

1. The RTC two digit year date is read at boot time and is furnished to the operating system by the BIOS as a four digit year value which will increment from 1999 to 2000 at midnight.
2. Then after rebooting, the correct 2000 date will be furnished to the operating system by the BIOS.
3. The year 2000 will correctly accept February 29, 2000 as a valid date.

The leap year rules say that any year evenly divisible by four shall have an

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AMSAT Australia net:

The AMSAT-Australia net is held on 80 or 40 meters LSB each Sunday evening. During daylight saving time in South Australia the net is on 7068 kHz +/- QRM with an official start time of 09000utc (with early check-ins at 0845utc), during the rest of the year the net is on 3685 kHz +/- QRM with an official start time 1000utc (with early check-ins at 0945utc).

AMSAT Australia newsletter and software service:

The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIRMAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

Keplerian Elements.

Current keps are available from the Internet by accessing the AMSAT FTP site, ftp.amsat.org and following the sub-directories to "KEPS".

extra day added, EXCEPT for century years, EXCEPT for century years evenly divisible by four hundred. In other words, the years 1600 and 2000 are leap years since they are evenly divisible by both four and four hundred. However the years 1500, 1700, 1800, 1900 and 2100 which are evenly divisible by four, but not by four hundred, are not leap years. How can you tell if your PC is Y2K compliant? There are three manual tests you can make which will help you determine this.

First, set your system date and time to December 31, 1999 and the time to about two minutes before midnight. Turn your PC off and wait for three or four minutes. Then reboot and check that the system date and time displayed are a few minutes after midnight on January 1, 2000. Secondly, set the date to any date after January 1, 2000, except February 29, 2000. Power down the PC and reboot. Check that the date shown is still the same date you set. Lastly, try to set the system date to February 29, 2000. If any of these tests fail, your PC is not Y2K compliant. If you want to perform a more thorough test, there are software programs available which can perform these tests for you. Also, in some cases, there are software solutions available that can correct for certain types of non-compliance for Y2K. One Internet site to visit for a more complete discussion of this problem and a free test program is http://www.rightime.com.

The Software

OK, so lets assume our PCs are Y2K compliant. We ought to be home free, right? Wrong! Our software must also be Y2K compliant. Back when early software was being written, the ability to conserve memory was paramount.

If you could find a way to store data in memory in a compressed way, you did it. It cost more processing time to compress and uncompress the data, but it saved memory. Memory cost more than processing time back then. One of the minor memory savings used was to store year values in two digits rather than four. In other words store 1985 as just 85. After all, everybody knew that the century value was 19 and it would be assumed that way by any software writer. As a result, in many cases, only two digit year values are contained in the data input to date and time sensitive programs.

One example of this is seen in the Keplerian elements data. Remember the Epoch entry? It is in the form YYDDD.xxxxxxxx, where YY is the two-digit year value. The satellite tracking programs written beginning in the middle to late 1980s have had to interface with these two digit year values. In many cases, the orbital calculation algorithms in these programs used the two digit year values throughout. A typical tracking program looks at the Keplerian elements and then calculates forward from the Epoch time in the elements to the current time to determine the current position of the satellite. This means that the year, day and fraction-of-a-day values in the Keplerian elements are the beginning point of the calculations. The current year, day and fraction of a day are the target of the calculations.

The program must determine the exact difference in time from the Keplerian element Epoch time and the current time. This involves mathematical operations on the year, days, hours, minutes, seconds, and fraction of seconds involved. Leap year days and Century days have to be accounted for also. This gets rather messy. So the Epoch times involved are converted to Julian days. Julian day one was January 1, 4713 BC. January 1, 2000 will be Julian day 2,451,545. There are mathematical formulas that let you input two different Gregorian calendar dates and times, with four digit year values, convert them to Julian dates and obtain the difference between the two dates in days and fractions of days. These formulas take into consideration all leap year and century days. This really simplifies things. This difference in time is the input to the orbital calculation algorithms that let us determine the current satellite position from the Keplerian elements. If there are tracking programs still out there, which do not use Julian dates in their calculations; they are in deep trouble. However, even those programs that do use Julian date calculations can still have problems. Remember, that the Julian dates are calculated from Gregorian date inputs that contain a four-digit year value. NASA has said that the Keplerian Element format will remain the same and that the year value will just roll over from 99 to 00 with the transition to the year 2000. When the tracking program looks at the Keplerian elements for a satellite, how then will it know what century value to use with the two-digit year value in the Epoch date? Somewhere along the calculation train, a decision must be made. One way is to make the assumption, for example, that any Keplerian Epoch year value 78 through 99 has a century value of 19, and any year value 00 through 77 has a century value of 20. Once this has been done, the use of Julian day calculations will safely allow you track a satellite right through midnight December 31, 1999 into January 1, 2000 without a glitch.

Another glitch to look for

In some orbital calculations it is necessary to calculate a value called the Sidereal Time value at January 1, YYYY at 00:00:00.000Z. This value is used throughout that year. Here again, the assumption above must be applied to determine which century should be applied to the two-digit year value. In other orbital calculations, the Julian date difference between the Keplerian Epoch year value and the Julian day value for January 1, 2000 is used. Still, it is necessary to convert the two-digit Epoch year value to a four-digit year value to obtain the Epoch Julian date.

Lastly, a less troublesome problem may arise when the Keplerian Elements are updated. Most tracking programs have a Keplerian update routine that protects against updating the elements for any given satellite with elements that are older than the ones already on file. Imagine what will happen when the first set of new Keplerian elements are issued in 2000. Some Epoch dates will have year values of 00 and some will still have 99. It usually takes one or two issues of Keplerian elements before all the satellites have a year value from the new year. In the case above, those satellites with Epoch year values of 99 will still update OK as long as the complete Epoch date is later than the ones already on file. However, unless some programming has been done to recognise 00 as representing 2000 and 99 as 1999, the 00 Epoch year elements will be rejected as being older than the ones already on file. Some programs may permit updates overwriting existing elements without regard to the Epoch value. This will be the work around for those programs where the normal updates are rejected. Others which are not compliant in this regard may require that

the tracking program Keplerian data base file be deleted completely before each update until the new Keplerian element files contain satellites with all Epoch year values of 00. This will be done automatically in those programs which do not create a Keplerian element data base file and instead, just read in the distributed Keplerian Element file itself.

What has been done?

OK then, just what is the status of our AMSAT distributed tracking programs with respect to Y2K compliance? First, some background. Back in 1985 when I first changed the ORBITS programs from an interpreted Basic program to a compiled Quick Basic program I ran up against this Y2K consideration. I decided at that time I didn't want to hear from a lot of people in fifteen more years, much less pay the postage for replies, etc. So I made the decision to force the user to input the Epoch year in a complete four-digit value separate from the Epoch day. I then tested the program across the 1999/2000 transition boundary and it worked as it should have. I was happy and confident that I would never have to worry with that problem again. Never say never! Time went by and in 1994 I began making inquiries as to what NASA was going to do about the published Keplerian elements. Were they going to change the format of the Epoch day or were they just going to roll the year value over to zero (00)? The answer I received was inconclusive.

"We didn't know yet." At that time I also began making inquires of a few of the AMSAT software authors as to whether their programs were Y2K compliant. I received some answers saying that it didn't appear so and a few that said yes. One said his program wasn't compliant and didn't expect it would be updated. In June, 1996, I e-mailed as many of the software authors as I could find, asking them to make a Y2K compliance check of their programs and let me know what the status of the programs were, and whether or not they would be made compliant or not. My concern was that we should stop offering any programs that were not going to be made compliant. As a result of that inquiry we stopped offering one program. The author said that he did not intend to update it. Then in October 1997, at the AMSAT Symposium in Toronto, Philip Chien KC4YER and I met with Ken Ernandes. We asked him if he could develop a set of test Keplerian elements for December, 1999 and January, 2000 that I could send to the software writers for their use in performing actual tests on their programs. He kindly agreed to do so and in a few weeks I received a TEST2000 zipped package via e-mail which I then sent to all the tracking software developers I could think of. Just for the fun of it, I decided to test the ORBITS programs again with the test Keplerian elements. It worked beautifully, tracking right up to midnight on the evening of December 31, 1999 and then into January 1, 2000 without a hitch. Then I tried to update the 1999 elements with the ones having 2000 as the Epoch year. Ugh!!! It refused to update, claiming the elements were older than the ones already in file. Back to the keyboard and compiler again. It had been so long since I had compiled a new version, that I had a problem remembering how to get the compiler set up. I did get the fix in and it is now fully Y2K compliant ... I think. Remember, "Never say never."

Where do I stand ...? ... I'll be buying a new computer and attempting to upgrade my old 486 so it can run programs other than satellite related ones. But then I've been prepared to do just that for some time now

Summary

I suggest you visit some of the web sites devoted to the Y2K problem. You can find them by doing a search with your web browser. Run the three simple tests to see if your PC will make the transition and if not, download a simple program to be run at boot time to see if that fixes the problem.

There are such programs available on some of the Y2K web sites. Check with your PC manufacturer to see if there are ROM BIOS updates or boot time programs available for your PC that will fix the problem. After all is done, if your PC still fails Tests 1 and 2 above, you have the worst possible Y2K scenario. If you have date/time sensitive programs running on that PC, you should consider replacing it. If the PC fails Test 1 and passes Test 2, then at least you can manually set the date after booting it up. If it fails Test 3 however, there is no work around and all dates following February 29, 2000 will show the wrong day of the week. This may or may not be a problem for your particular applications. Once you have run through the tests covered earlier in this paper, checked out your application programs and have satisfied yourself that all is well, then you should not have any further date/time problems, right? Remember; never say never. Those of you with some of the older GPS units, watch it on the evening of August 21, 1999 when the week counter rolls over from week 1023 to week 0. Also, watch out for the year 2038 when the signed long integer variable in the compiler that compiled your program is too small to contain the Julian date values. When this happens, I don't expect to still be around. However, I can look ahead and imagine that those who are, may wake in the middle of the night or look up from their work, depending on where they are, and wonder, "What was that?"

Sources

Pete Woytovech, Senior Programmer Dell BIOS Development, "The Century Rollover and the PC System Date".

RighTime (The RighTime Company, Miami). J. David McLaughlin, Systems Coordinator Simco County Mental Health Education, "Testing Your PC's Hardware Year 2000 Readiness".

Well ... that's the story according to Roy et al. Where do I stand in view of the above? Simple ... I'll be buying a new computer and attempting to upgrade my old 486 so it can run programs other than satellite related ones. But then I've been prepared to do just that for some time now. How did you fare? Good luck!

ar

SPOTLIGHT on SWLing

by Robin L. Harwood VK7RH
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"Sparky, it's time to go"

SUMMER HAS GONE and already Propagation is changing. Daytime signals are becoming increasingly noticeable with the propagation we have experienced on the higher frequencies in the evening hours gradually dropping off. Also the major seasonal alteration is due to take place on Sunday March 28.

This is when most of Europe goes on to Daylight Saving Time, which also coincides with those Australian states reverting to Standard time. Previously there were four set periods roughly corresponding to the seasonal variations but this was reduced to two, being the last Sundays in October and March. However some broadcasters still have opted to keep the four periods.

Final message

"Sparky, it's time to go" was the final message tapped out in Morse over Melbourne Radio, VIM, on Monday February 1 at 0019 UTC. After 87 years of continuous service to the maritime service in Australian waters, the plug was finally pulled on 600 metres (500 kHz) when this frequency was no longer required to be constantly monitored, either by coast stations or by radio officers at sea. It remained the primary search and distress channel from the very inception of wireless telegraphy at sea until then. It was on this frequency that the Titanic sent out the first SOS signal on the 14th of April 1912, after colliding with an iceberg in the North Atlantic.

Thousands of lives could have been saved if the wireless operator on a nearby American steamer the "SS California" had kept monitoring the channel. Instead he turned off the receiver and went to bed. Following the Titanic disaster, it became mandatory for all ships at sea and for land stations to constantly monitor 500 kHz in case of another emergency.

In 1988, it was decided to introduce a new automated system called GMDSS or Global Maritime Distress and Safety System. This came into effect last month and the MF service was no longer required, nor was the use of Morse. Also GMDSS has done away with the need of a permanent radio officer on board. All communications are computerised and the use of satellite delivery means that MF and HF are no longer needed. Will the wheel turn full circle? Many think that the bureaucrats have got it all wrong. Satellites are prone to fail due either to mechanical failure or from solar flares. They are also vulnerable to strategic attack by missiles.

The cost of telecommunications via satellite at sea is still fairly expensive. The American Globe wireless company has capitalised on this by acquiring many former HF coast stations and linking them by satellite to their HQ in California. Although VIP Perth radio may have closed their CW operation, the call is continuing with Globe's SITOR/CLOVER server. I do hear some Globe outlets still using c/w, primarily KFS/KPH in California and A9M in Bahrein.

Yes there still are other stations within the maritime allocations still employing c/w, mainly in China, Taiwan, Korea, Indonesia and Italy. The Japanese have gone. They were an excellent measure of 22 MHz propagation. Although Morse may be fading away, amateurs are still enthusiastically using it and are some intelligence agencies who use it to send traffic in cut numbers. Letters are sent instead of numerals. There is one strong station doing this from the USA on 6785 KHz +/- around 1000 Hrs daily. No callsigns are given, just numbers.

What is filling the void are plenty of Asian SSB stations. Because they seem to use vernacular of dialects, identification is almost impossible. I am reliably informed that the traffic often revolves around illegal activities including piracy. I did recently hear an item on the BBC World News that the International Maritime Organisation (IMO) stated there was a dramatic increase especially in South-east Asian waters. I would not be therefore surprised that they could be using SSB transceivers either modified amateur or redundant marine equipment.

There also seems to be other modes being heard within these allocations. There is one with a whooshing sound, not to be confused with the R7B mode. I think it is some kind of digital mode used by NATO.

When does the twenty first century begin?

Following my comments in the January issue, I received a letter from Ken VK4KF querying my assertion that 21st Century starts on January 2001. He wants to know if it was promulgated as the official date. Well I have consulted the VK7 divisional solicitor and also note that the Commonwealth constitution came into effect on the first day of the 20th.Century being January 1, 1901.

Ken maintains that the first number is zero and thus 2000 should be the first year. When I was at school, I was taught that the first number was 1. I am certain that 1/1/2001 is the first day of the 21st century. Legally you are not one until you have your first birthday that is one year after you have been born, unless you were unfortunately born on the 29th February, then you have to wait four years for your first birthday. 2000 is being touted as being the birth of the millennium. This topic has been also hotly debated in the editorial columns of many local papers.

Belgium

You may know that Belgium is linguistically divided into two, French and Flemish (a variant of Dutch). For many years there have been two separate broadcasting organisations catering for each group. The French service discontinued using shortwave several years ago and the Flemish section, which also produces other languages such as English, continued. Now the French section known as the RTBF is back on shortwave but using the Deutsche Telekom facilities as Juelich, Germany. I am hearing them on 9490 around 0530 daily, although after March 28, this will probably alter.

Well that is all for this month. My thanks go to Ken VK4KF, EDXP. Don't forget that you can contact me at the above address or e-mail me at

robroy@tassie.net.au.

73,
Robin VK7RH

Divisional News

VK2 Notes

Annual General Meeting:

A reminder that the AGM of the VK2 Division is to be held at Amateur Radio House, Parramatta on Saturday 17 April 1999 commencing at 11.00am.

By the time most of you read this the deadline of 6 March for Council nominations for will have passed and the list of nominees closed. I sincerely hope that more than the required nine have been received and, therefore, an election by ballot will be necessary.

The Annual Report together with the necessary ballot papers, including a brief history of the various candidates, will be forwarded to all members eligible to vote mid March in accordance with our Articles of Association. Under "Motions on Notice" you will see there are a number of amendments to the Articles that have been recommended by the Policy and Strategy Committee and approved by Council. In every case the amendment is of a minor nature and is designed to clarify and reinforce the Article in question. Please, therefore, consider them carefully by comparing the proposed wording against the original.

One very important point - if you cannot attend the AGM please ensure that you appoint a member who will be attending as your proxy. Remember also to give him or her instructions as to how you wish them to vote on your behalf. It is YOUR Division - have your say!!!

New Member Prize:

As previously advised in this column - a draw will be held at the AGM and the lucky new member will win an ICOM 706 MarkII (valued at about $2300) kindly donated jointly by Icom Australia and Amateur Transceiver Radio Centre of Girraween, NSW. To be eligible to be included in the draw Membership Applications must be received not later than 26 March 1999.

All New Members previously approved will automatically be included in the draw. So why not try once more to persuade that friend to join the Institute - you could be doing both him/her, and the Institute, a big favour - they could win the ICOM and the WIA becomes that little bit stronger at the negotiation tables.

Dural:

More upgrading of equipment etc. is proposed for Dural with Council recently approving expenditure on crystals for new transmitters. A request has also been received by Council from our Dural Engineers, supported by the Dural Officer, that new, low-loss, coax and connectors be purchased to replace some of the older cable. At the recent Council Meeting it was resolved that quotations should be obtained from various suppliers.

'til next time -

Eric Fossey VK2EFY
Division Secretary.

Qnews - VK4 Notes

RMT Awarded AX Day Medallions

A just reward story has surfaced in VK4: - John VK4AFS sniffed out this one on three dedicated volunteer Amateurs. Messrs Bill Sebbens VK4XZ, Guy Minter VK4ZXZ and Brian Rickaby VK4RX were summoned to appear at Queenslands Parliamentary Annex for Australia Day. They have been presented with the Australia Day Medallion by the Minister for Emergency Services, the Honourable Merri Rose MP, *'for outstanding contribution to the development and implementation of the Rural Fire Service's communication network'*.

The RMT gang, (Retired Maleny Trio) submitted a proposed new and improved radio bandplan to the Commissioner for Rural Fire Services. She accepted it, and then Brian, Guy and Bill proceeded to visit all Rural fire Brigades in the area from Noosa to Kingaroy to reprogram their Transceivers to the new bandplan. I might add all this was done on a voluntary basis.

As they said during their acceptance speech, "We consider it's a great way to use our Amateur Radio knowledge for the benefit of the community".

80 Meters Returns

Wayne VK4NWH will recommence the Sunday Morning 80 Metre QNEWS as from the 21st February on 3.605 MHz. The weekends of the 7th and 14th, VK4WAG Maurrie did the 80 meter transmission using the internet feed, however it appears no callbacks were forth coming.

Golden Days Of Wireless

Golden Anniversary celebrations are in order for VK4RH, Leigh Hoey of Broadbeach, on Queenslands Gold Coast. Leigh has just "clocked up" 50 years as a licenced operator in our Amateur Service. Well done on this landmark achievement.

WIAQ Annual General Meeting

Keep April 17 free so you may attend and vote in a brand new team for 1999-2000. The venue this year will be the Edwards Room at the Bronco's Leagues Club, Fulcher Rd, Red Hill. The start time as yet to to be advised.

Southside AR Society

Warren VK4WH would like to remind members that due to the summer storm season playing havoc with 80m. The 80m Sunday night nets have been moved to 28.430MHz USB. Static and general QRM was noted at 20dB on 3.565Mhz most nights, with most people on the net having difficulty hearing each other. As you will be aware propagation has been quite good on 10m for the past few weeks so the chance of a DX station dropping in is quite possible. Nets are held at 7:30pm QLD time Each Sunday night.

Townsville

FNNQARGG! : A reminder that this years Far North and North Queensland Amateur Radio Get Together will be held at Beachcomber Coconut Village, South Mission Beach, from Friday Afternoon 11th to Monday 14th June 1999. Plenty of time to organise your travel to this idillic spot.

Alistair Elrick VK4FTL
WIAQ Treasurer.

VK5/VK8 Division Notes

Burley Griffin Building - Move of Headquarters

As of writing, mid February, we are awaiting full details of a proposed lease and licence from the City of West Torrens Council for use of the appropriate buildings for our proposed new Headquarters and other meeting facilities. I would expect that by the time this material appears in print we will have received and examined such documents, following which it will have been necessary for a final decision to be made regarding the proposed move.

In the meantime we have gone ahead with

arrangements, as instructed by members at a General Meeting, to pursue the matter as expeditiously as possible. To this end a Planning Application has been submitted which, if approved, will allow us to erect a suitable tower on the site. This action has been taken in view of the fact that such approvals can take some time and the existence of a tower would be a prime requirement prior to any further moves to change the location of VK5WI.

Rest assured that members will be notified as soon as possible, that means probably via the Sunday News broadcast, as to the ongoing developments.

Sunday Broadcasts

We recently saw a need to update the record of arrangements with the Australian Communications Authority (ACA) regarding the provision of a weekly Sunday news "broadcast". A letter was written to the Adelaide office of the ACA and a reply subsequently received.

Space considerations for these notes preclude reproduction of the full text of the ACA letter. In the reply the ACA points out that "the arrangements in place are the result of various decisions made over a number of years and are, thus, the product of history.' The letter continues, "I can say that the Australian Communications Authority (ACA) has no intention of changing these at present and is happy for them to continue for the present."

The letter also points out that although the notion of a "broadcast" may seem to be at odds with the Licence Condition Determination, the view is taken that "these may be sanctioned on the grounds that they are intercommunications with members about radiocommunications matters and are thus in accord with the broad definition of Amateur Radio".

The ACA sees no need to alter the present arrangement at this time, including the agreement to allow an equipment disposal section of the broadcast.

In connection with the production and transmission of the weekly broadcast the Divisional Council recently approved a revised set of "guidelines". These were read as part of the broadcast on 7 February and will be available in the Divisional Notes, Packet Radio version for that date. Copies will also be provided to the various affiliated Radio Clubs and other regular contributors to the weekly broadcast.

The Andy Thomas Show

During January I was approached by our own Australian astronaut, Dr Andy Thomas, who had operated as VK5MIR during his mission on the Russian Space Station. Andy was hoping to be able to meet as many as possible of those Amateur Radio operators who had made contact with him during that event. I explained that we had no real way of determining just who these were, however, an evening was organised where all Amateur Radio operators were invited to hear a talk by Andy on his experiences.

This event took place on 20 January and was possibly the most successful Amateur Radio event ever held in South Australia. We had some difficulty in promulgating details as the weekly Sunday Broadcast was in recess for most of the time leading up to the event, however, a lot of work was done to try and reach as many people as possible. We feel that we did achieve this purpose.

The evening with Andy Thomas was of such significance that I do not believe we can do justice to it in these Divisional notes. I will thus be producing a separate article, with photographs, to deal with it.

QSLING for VK5MIR Contacts

No provision was made in the USA for any special QSL card for contacts with VK5MIR. It is not surprising that the significance of the operation using this callsign was overlooked by our United States friends. Action has been taken to remedy this situation. Members of the VK5 Division of the WIA saw fit, at a General Meeting to vote for the costs of such a QSL card to be borne by the Division. A suitable card is in the process of being produced.

Those who made voice radio contact with Andy Thomas when he operated as VK5MIR on the Russian Space Station may obtain a commemorative QSL card for such a contact. They should send their own QSL card accompanied by a self addressed stamped envelope (SASE) to Ian Hunt VK5QX at 8 Dexter Drive, Salisbury East, South Australia.

It has been decided that a "cut off" date will be set for receipt of requests for a VK5MIR QSL card. Cards received after that date will not be acknowledged. The "cut off" date will be announced in this magazine and on broadcasts from VK5WI.

The reason for this approach is that we do not have any definitive log for the VK5MIR operation and thus no idea as to how many cards may be required. We also wish to keep costs for the cards to a reasonable minimum.

I would ask that you also spread this information to non-WIA Members where you think that they may have made contact with Andy Thomas as VK5MIR. Again, I emphasise that this applies only to "voice" contacts. Requests for QSLs for Packet Radio contacts with the MIR Space Station should be sent to the USA address provided for R0MIR.

A Memorial For Alf Traeger (VK5AX)

On Australia Day, 26 January, a memorial to the late Alfred Hermann Traeger OBE 1895 - 1980 was unveiled by the Member for Wakefield and Speaker of the House of Representatives, the Hon. Neil Andrew MHR. He was assisted in this task by Mrs Traeger.

This event took place at the town of Balaklava located to the north west of Adelaide. The site of the memorial is a garden area on the southern entrance to the town and adjacent to a school. The memorial is in the form of a sundial with a suitably inscribed plaque fixed to the base. The plaque refers to Alf as having invented the famous "pedal radio" system as used on many outback stations for emergency contact with the Royal Flying Doctor Service. It also mentions that Alf was an Amateur Radio operator and a Member of the Wireless Institute of Australia.

Mr Neil Andrew spoke regarding the history of Alf Traeger and exhibited a sound knowledge of his various exploits. I was invited to speak on behalf of the WIA at the unveiling ceremony. Quite a number of Amateur Radio operators from both the local and city areas were present. I hope to soon be able to provide some suitable photographs in connection with this historic occasion.

Divisional Meetings

The February General Meeting of the Division will have been held by the time this material appears. The evening will have been in the form of a visit to the ABC Radio and Television studios in Adelaide. A report on this visit should appear in the April issue.

The March General Meeting will be held on Tuesday 23 commencing at 7.30pm. Unless other notice is provide the location will be the Burley Griffin Building. Keep tuned to the weekly Sunday broadcast for any additional information. This meeting will feature a presentation by Tony Bell VK5UA on military radio equipment. Tony has a remarkable collection of such items and I am sure that those attending will find the evening very interesting.

Members are reminded of the Annual General Meeting that will be held on Tuesday 27 April where the Divisional Council for the ensuing year will be appointed by the members. Please make a note of this date in your diary and determine to attend this most important evening.

For now I wish you all the best on behalf of the Council and the Division.

73 de
Ian VK5QX
Divisional President

VK6 Notes

Hello to all VK6 members. As I have been away from the column for awhile, I will take this first opportunity to wish you all the very best during 1999, and I hope we can all find the time to enjoy the rapidly improving propagation now being provided by the rising sunspot cycle no. 23. It appears that I have missed out on some good VHF DX too while working offshore, with for example, John VK6AFA, working into Victoria on 2m FM !

2m Beacon

Tom VK6TR, President of the Southern Electronics Group in Albany has advised that the Albany 2mx beacon VK6RTW recommenced operation from his location at King River near Albany on Saturday 30th January 1999. The beacon has a new transmitter operating on 144.564 MHz, (a change of frequency from the old 144.465 MHz). It runs 10W into two yagis; one east and the other north towards Perth.

VK6RTW is also licensed for 50.308 MHz. The transmitter for this frequency is installed, but awaits an antenna at this stage. It is expected to commence operation shortly.

(thanks to Don VK6HK for this item)

VK6RAV working bee

This was held on-site just outside Northam on Sat 23rd Jan, the main purpose of which was to ascertain whether or not a UHF path exists from RAV to RUF in Perth. It is intended to link RAV "on demand", into the existing country / city 2m system, in order to provide better access from the east to broadcasts, WARG weekly nets, and to friends in the city and broader country areas.

A very early start was made by the Perth (and Beverly) contingents, as we all met at the QTH of Jim VK6CA, in Northam, at 07:30 am! As it was a windy day, there was not much enthusiasm for bringing the 90 ft (+/-) tower down and wrestling with guy wires. The suggestion was made that someone should climb the tower instead. After a prolonged silence in which no volunteer stepped forward, someone else recalled my promise, unwisely made in a previous column, that I would climb if no one else would. Accordingly I soon found myself installing the test antenna at about 50 ft, a sobering enough experience on a very gusty day !! The important thing is that it worked, contact was made with Perth via RUF, mission accomplished and we have a path ! Many thanks for the support of all those involved in this project, and a special thanks to those who attended the bee from afar. Attendance this day included; VK6CA, VK6LZ, VK6MT, VK6NT, VK6TRC, VK6ZLZ, VK6BIK.

I understand that RMS Mt. Saddleback was also the subject of a working bee recently, and that the new 15-element UHF voice link beam was connected up with considerable improvement in signal strength. The beam is at the bottom of the last section. At least 6dB signal improvement was achieved and it may be as much as 9dB.

On Air General Meetings

The recently inaugurated on-air meetings appear to have drawn strong participation with the Tuesday 19/01/99 meeting having 22 participants on VHF, including 7 Councillors, and 2 on 80 m. The purpose of the Net is to overcome lack of member contact since General Meetings of the VK6 division have been discontinued. The call sign is VK6WIA, held on 146.750 MHz Lesmurdie Repeater and an 80 Metre Gateway on 3.564 Mhz controlled by Will VK6UU. Net Controller is Tony VK6TS. Meetings open at 1930 Hours (I believe still every 3rd Tuesday).

VK6TS Tony opened the net and invited participants to raise points of interest for discussion. Subjects discussed included; Net Notes published on Packet, Amateur Radio Study/Courses, WIA run Courses, Examination Costs, Benefits to Non-Members, various licensing fee issues, WARC/ International Representation, Submission on AR to 38th Parliament, Response to new AR Magazine Format (generally favourable). The net closed at 2046 hours.

Red Flag item

One of the items discussed above leaves me uneasy about the long-term future and the situation described surely needs our urgent attention. The subject: WIA run Courses.

One participant asked if the WIA had run any courses, this was answered in the affirmative. Some years ago a series of courses had been run very successfully, however in later years it had been almost impossible to find sufficient candidates in spite of heavily subsidising the course and advertising it in the press.

The last WIA courses were held in 1996 and 1997, although a course had also been run privately by VK6JG last year. I'm sure that any letters sent to the Editor on how you think we could address this situation will be well received and will also be of more than passing interest to our Councillors.

January Council Meeting

Some items of interest:

(1) A letter has been despatched to ACA supporting the Hills Group application for a HF Morse Beacon.

(2) A letter to Clubs proposing a conference on 24th April is being prepared.

(3) Proposed motions for the Federal AGM about possible fee increases have been circulated.

(4) AR Magazine has been advised of changes to Broadcast frequencies.

(5) Enquiries are being made about the recovery of possible WIA records.

(6) Bill Bolton, VK6MB had become a Silent Key in the last few days (our deepest sympathy to family and friends).

(7) Re: coverage of persons climbing towers. The Insurance Broker had confirmed that unqualified but experienced volunteers were conditionally covered by the WIA policies. It was up to the WIA to ensure that volunteers were experienced.

(8) Attention was drawn to the final Morse transmission from VIP Perth (and other coast stations) on Monday morning 1st February at 0000Z. Harry 6WZ had achieved some publicity on ABC radio about the topic. The final message had been hand sent by an operator who was also a Licensed Amateur. VIP had provided the service for 87 years.

(9) Callbacks for the Sunday news service had totalled 132 recently.

(10) The closing date for nominations for Federal positions is the 19th March.

73,

Chris VK6BIK,
chrismor@avon.net.au

"QRM" Tasmanian notes

VK7 notes

Firstly my apologies for those who were waiting with baited breath for the Tasmanian notes in the February edition - they just didn't get there - sorry!.

The February Branch meetings incorporating each branch's annual meeting have come and gone with the loss of some old faces from the executives and some new ones elected.

Southern Branch

Officers elected for the next year are:

PRESIDENT	Mike Jenner,	VK7FB
Vice PRESIDENT	Scott Evans	VK7HSE
SECRETARY	John Bates	VK7RT
TREASURER	Harvey Lennon	VK7KSM

The names of the other officers will be notified later.

President Mike reported a very satisfactory year but expressed concern on finance. Cost of the repeater maintenance etc. is putting severe stress on the bank account.

Northern Branch

Officers elected for the year are:

PRESIDENT Al Burke VK7AN
Vice-PRESIDENT Geoff Wells VK7ZOO
SECRETARY Tony Simmonds
Ass. SECRETARY Phil Corby VK7ZAX
TREASURER Tim Holloway VK7TIM
QSL MANAGER Frank Beech VK7BC
Wicen/Education/
Examinations Officer Barry Hill VK7BE

In his annual report Al highlighted the excellent co-operation between members resulting in a very good year. Social events on some meeting nights, the Christmas barbecue at Myrtle Park/ the annual get-together at Christine and Paul Godden's, Scamander, plus some fine speakers at regular meetings had held member interest.

He thanked five members who have worked hard braving some stormy and cold weather on Mt Barrow to keep the repeaters on air.

The branch patron and QSL manager, Col Wright, VK7LZ has had to resign and will be sadly missed.

The northern branch has seen a succession of candidates passing and/or upgrading their licences under the eye of Barry Hill, VK7BE. Hopefully lots more to come.

North-west Branch

Our 1998 President David, VK7ZDJ and Secretary John, VK7KCC did not seek renomination. The new Executive is: -

PRESIDENT Al Burke VK7AN
PRESIDENT Bob McCulloch, VK7MGW
Vice PRESIDENT Bob Cropper, VK7BY
TREASURER Terry Ives, VK7ZTI
REPEATER MAINTENANCE
Alan van Dullemen VK7KAN
QSL MANAGER Ken hancock VK7KH

Retiring President David, in his annual report highlighted the very successful Christmas dinner function and the branch barbecue, both held in Ulverstone. He also recorded the problems of repeater maintenance.

Divisional Annual Meeting

This is being held in Burnie this year on March 13th. in association with a Hamfest and the Divisional Annual Dinner. Preparations are well in hand for a very successful day - all we need now is lots of amateurs to turn up!

Reading these notes one may be excused for thinking that all we do here is feed the inner man. Let me assure you that the way our members pull together and work any inner sustenance is richly deserved.

Ron VK7RN
Tasmanian President.
ar

Radio Amateurs Old Timers Club

Our March luncheon will be held at the extensively refurbished Bentleigh Club on Tuesday, march 16.

Lunch will be served at 1.00pm. The cost will be $25 per head as in previous years. Refreshments during lunch included.

The Club is located in Yawla Street, Bentleigh, Melway map reference 68 — B11.

A very interesting talk will be given by Mr Brian Horman founder of the company Court Recordings and a past President of the American Audio Engineering Society (Australian Division)

Friends of members and members of other clubs are welcome to attend, provided a firm booking is made not later than Thursday March 11 with our Secretary, Arthur Evans VK3VQ, phone 9598 4262.

Members are reminded that subscriptions are now due on April 1 because of the change in our financial year from July/June to April/March. Regretfully subscriptions will now be $8 per year, or $15 for two years. Without this change we would have to consider producing only one "OTN" magazine a year and we feel sure members would not want that to happen.

Allan Doble VK3AMD

silent keys

The WIA regrets to announce the recent passing of

W S (Bill) Munn VK2BMX
B Jordan VK2MLL
C (Ian) Beulke VK3BQB
L S (Stan) Dixon VK3 TE
J L (Jack) Bates VK4UR

Jack Bates VK4UR

JACK OBTAINED HIS LICENCE in 1935 and was very active prior to the war.

With a wife and young family to raise, he did not return to the airwaves after the war until 1973.

Over the last 25 years, Jack was very active on the bands mainly on CW. He was particularly pleased to renew many old contacts that he had pre-war, particularly Stateside. Jack's great love was rag chewing with "Yanks" on CW.

He is survived by two close radio friends from his pre-war days, George Gray VK4JP and Charlie Miller VK4QM (ex VK4UU, VK2ADE) who were both instrumental in helping to get him back on the air.

Jack also built new friendships with younger hams including Sava Magazinovie VK4PN, Greg Lee VK4AML and his nephew Keith Griffin, VK410.

He was particularly pleased recently to renew a pre-war association with Madeline Pugh (nee Mackenzie) VK4YL who gained her licence at 12 years of age on the same day as Jack.

Jack entered many contests. He was a keen DXer and QSLer who believed that the secret of having a good signal lay in the choice of antenna. He also enjoyed going QRP.

Jack is survived by his wife Dorothy VK4NAM, member of ALARA, Ian ex VK4KUR and Ken.

Ken Bates

CONTESTS

Ian Godsil VK3DID,
57 Nepean Highway, Aspendale, 3195

CONTEST CALENDAR MARCH - MAY 1999

Mar 6/7	ARRL DX SSB Contest (Jan 99)
Mar 13/14	Commonwealth Contest (CW) (Feb 99)
	World -Wide Locator Contest (CW/SSB/MIXED)(Mar 99)
Mar 20/21	WIA John Moyle Field Day (Feb 99)
	DARC HF SSTV Contest
	Bermuda Contest (Feb 98)
	Russian DX Contest (CW/Phone) (Feb 99)
Mar 27/28	CQ WPX SSB Contest (Feb 99)
Apr 3/4	SP DX Contest (CW/Phone) (Mar 99)
Apr 9/11	JA DX CW Contest (High Band) (Dec 98)
Apr 10/11	King of Spain DX Contest (CW/Phone)
Apr 17	Australian Postcode Contest (CW/SSB) (Mar 99)
Apr 17/18	Holyland DX Contest (CW/Phone) (Mar 99)
Apr 24/25	Helvetia DX Contest (CW/Phone) (Mar 99)
Apr 24/25	SP RTTY Contest (Mar 99)
May 1/2	ARI International DX Contest (CW/SSB/RTTY)
May 8/9	CQ-M International DX Contest (CW/SSB/SSTV)
May 29/30	CQ WW WPX Contest (CW) (Feb 99)

Thanks this month to VK4VW SM3CER

RESULTS OF JACK FILES CONTEST 1998

from Peter Dawson VK4VW

CW 4 July 1998

(Posn\call\score)

Section A Single Operator Home
1 VK4EMM 2680**
2 VK4BAZ 1764*
3 VK3APN 1651*
4 VK4VFX 616
5 VK4BOV 275
6 VK3DID 41
Phone11 July 1998

Section A Single Operator Home
1 VK4AJS 5049**
2 VK4VFX 2834*
3 VK3KQB 360*
4 VK4AO 56

Section B Club Fixed
1 VK4QD 7114*

Section C Single Operator Mobile/Portable
1 VK4JAE/7 80*

Section D Club Mobile/Portable
1 VK4BAR 7226**

Section E No entrants

Section F SWL
1 L40383 1495*

WORLD WIDE LOCATOR CONTEST

13/14 March 0000z Sat. - 2400z Sun

Bands: 160- 10 metres (no WARC). **Modes** CW, SSB, Mixed.

Categories:

Single Op: (CW, SSB, Mixed, High Pwr, Low Pwr)
1. All bands
2. Single band
3. Any two bands

Multi-ops (CW, SSB, Mixed)
1. Single TX - one signal anytime; 10 minute rule (per band and mode);
2. Two TXs - two signals anytime, but different bands; 10 minute rule (per band and mode)
3. Multi-multi - one signal on each band. Packet allowed for multi-ops.

SWL single op., no packet allowed.

Exchange RS(T) plus WWL (four characters eg QF26).

Score depends on computed distance between centres of locators. Each 100 km = one point on 40/20/15/10 m; two points on 80 m; four points on 160 m.

Multipliers are first two characters of WWL on each band separately regardless of mode.

Final Score is total QSO points X total multipliers.

Logs: electronic logs only in ASCII format. It is not necessary to have Computed points/ multipliers/final result). Send by e-mail to: ok2fd@contesting com.> or by mail to Karel Karmasin, Gen. Svodoby 636, 674
1 Trebic, Czech Republic

SP DX CONTEST (CW/PHONE)

1500z Sat - 1500z Sun, 3-4th April

Categories: single operator (single/all band), multi-operator and SWL. Bands are 160 - 10 m (no WARC) and modes are CW and SSB. No mixed Code logs allowed. Send RS(T) plus serial number. SPs will send RS(T) plus a two-letter province code. Score three points per QSO with each Polish station. Final score is total QSO points X number of Polish provinces worked (max 49). In this contest, multipliers are counted once only. SWLs must receive the callsign and number sent by Polish stations, plus the callsign worked. Each SP may be logged only once per band. Send log, summary sheet and multiplier check sheet postmarked by 30 April to: SPDX Contest Committee, Box 320, 00-950 Warsaw, Poland. Disk logs in ASCII format are welcome.

Polish provinces are: - SP1: KO SL SZ; SP2: BY EL GD TO WL; SP3: GO KL KN LE PI PO ZG; SP4: BK LO OL SU; SP5: CI OS PL SE WA; SP6: JG LG OP WB WR; SP7: K9I LD PT RA SI SK TG; SP8: BP CH KS LU PR RZ ZA; SP9: BB CZ KA KR NS TA.

HOLYLAND DX CONTEST (CW/PHONE)

1800z Sat - 1800z Sun, 17/18 April

Object is to work as many Israeli stations as possible. Bands are 160 - 10 m (no WARC) and categories: single and multi-operator multi-bands; SWL. Send RS(T) plus serial number. Israeli stations will send RS(T) plus area code. The same stations may be contacted on both CW and SSB on each band. Score two points per QSO on 160/80/40 and one point on 20/ 15/10. Final score is total points X total areas, with areas counted separately for each band. SWLs should report Israeli stations only, and include time, callsign, station worked, RS(T) plus area code and points. Send summary sheet and separate logs for each band, postmarked by 28 May 1999 to: Contest Manager, Israel Amateur Radio Club, Box 17600, Tel Aviv, Israel 61176.

HELVETIA DX CW/SSB CONTEST

1300z Sat - 1300z Sun, 24/25 April

Work only Swiss stations, CW on 160 - 10 m and SSB on 80 - 10 m (no WARC). Each station may be worked only once per

band regardless of mode. Score three points per QSO. Multiplier is total number of Swiss cantons worked (max 26 per band). Send log to be received by 11 June to: Niklaus Zinsstag HB9DDZ, Salmendorfli 568, CH-4338 Rheinsulz, Switzerland. Cantons are: - AG AI AR BE BL BS FR GE GL GR JU LU NE NW OW SG SH SO SZ TG TI UR VD VS ZG ZH.

SP DX RTTY CONTEST

1200z Sat - 1200z Sun, 24/25 April

Categories are: - single operator all bands; multi-operator all bands; SWL. Use Baudot mode on bands 80 - 10 m (no WARC) and call CQ SP RVG TEST. Exchange RST plus serial number. Score two points per QSO with own country, five points with other countries in same continent and ten points with other continents. Multipliers are the sum of DXCC countries and Polish provinces (max 49). Send logs postmarked by 25 May to: SPDX RTTY Contest Manager, Box 253, 81-963 Gdynia 1, Poland.

AUSTRALIAN POSTCODE CONTEST

0000z - 2359z Sat 17 April

Aim of this contest is for stations worldwide to work as many different Australian Postcodes as possible. VK/VK contacts are permitted. Contacts made during this contest will be eligible for the "Worked all VK Postcode Award". Bands: 80 - 10 m (no WARC). Modes: SSB and CW. Please note on 3.5 MHz band VKs are not permitted to contest in the DX window (3.8 MHz). Categories: Single operator all bands and SWL. Exchange: a. VK Stations will send RST plus their four-digit postcode. b. DX stations will send RST plus a serial number commencing with 001. Score 2 points per contact within Australia and 10 points per contact between Australia and another country. Countries are as per DXCC/WAE. Multiplier: is the number of different postcodes worked on each band in the relevant mode, with the band totals added together. PLEASE NOTE that repeat contacts on the same band and mode are not permissible, except that VK stations that go mobile to different postcodes can be reworked for the new postcode. Final Score is total QSO points from all bands times the total multiplier. Logs must show the Date, UTC time, band, mode, callsign of station worked, exchange sent and received, new multipliers, and points. Attach a summary sheet showing: name, address, callsign, section, number of valid QSOs and multipliers on each band, claimed score and a signed declaration that the rules and spirit of the contest were observed. Send logs to the following address postmarked no later than one month after the contest: - Australian Postcode Contest Manager, Oceania DX Group, P O Box 929, GYMPIE, QLD 4570, AUSTRALIA. Logs may be sent by e-mail to: <odxg@keylink.com.au > Logs sent on disk must be standard format as per ARRL.

Contest criteria.

Untidy logs may be disqualified. Unmarked duplicates will result in the loss of all points for the QSO as well as the deletion of three contacts following the duplication.

Awards: The overall winner will receive a plaque kindly donated by VK4FW. Certificates will be presented to the station with the highest score in each section in each country as well as runners-up. A special award will also be presented to the highest placed VK novice in each section. Further awards may be made at the discretion of the Contest Manager.

Thanks and 73 de Ian VK3DID

HARRY ANGEL MEMORIAL SPRINT

1100 - 1246 UTC, Sunday April 25 1999

This sprint contest which is open to all Amateur Stations and SWLs honours the late Harry Angel VK4HA. Harry who passed away at the age of 106 in 1998 was at the time Australia's oldest living Radio Amateur. Harry served in the Middle East and other areas during the First World War. The Sprint will be unique, as it will last for 106 minutes, Harry's Age, in place of the customary 60 minutes.

The **Object** is to make as many QSOs as possible on the 80m band (SWLs hear and log QSOs) during the 106-minute contest period using Phone or CW modes.

Categories are Single operator only. CW, Phone, Mixed (CW & Phone), & SWL.

Frequencies are 3500-3700 kHz (CW) and 3535-3700 kHz (phone).

Contacts in the "DX Window" (3.798-3.800) are not permitted.

Exchange RS(T) and a serial number starting at any number between 001 and 999, reverting to 001 if 999 is reached.

Score two points per CW QSO and one point per Phone QSO. You may work a station once only using each mode. Logs must show the time (UTC) callsign worked (or both callsigns for SWLs), mode, RS(T), and serial numbers sent and received for each QSO.

Logs must be accompanied by a summary sheet showing name and date of the contest, category entered, name and callsign of the entrant, station address, equipment used, points claimed and a declaration that the rules and the spirit of the contest were observed.

Send logs to Harry Angel Sprint, PO Box 171, Caboolture QLD 4510 or by email in plain text only to vk4vw@qsl.net to be received no later than Friday 28 May 1999.

Certificates will be awarded to the top three scorers in each section with a perpetual trophy awarded for the top scorer in the CW, Phone & Mixed categories.

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silent key — Nim Love VK4JL

NIM LOVE VK4JL passed away this week in Bundaberg.

VK4JL - J.P. (Nim) Love, AOCP Brisbane 1930. Nim started out building crystal sets as a boy. Later he obtained his ticket and joined the Wooloowin Radio Club. Nim installed his station aboard the family yacht "Sweetheart" and conducted many ship-to-shore experiments with Vern Kenna VK4FK.

Radio Inspector Tom Armstrong who monitored every message sent just in case a monetary charge could be levied strictly supervised his activities. Using less than 10 watts input he could work easily into the USA. He served in the AIF as Artillery Commander 2/5th Field regiment in UK, Greece, and the Middle East. ending his time as Lieut-Colonel in New Guinea. Nim was a member of the Royal Queensland Aero Club, a long serving member of the Queensland Boy Scouts Association (decorated in retirement), and member of the Brisbane Rotary Club. He did not renew his licence post WWII but reclaimed his call sign in the 1980's. Farewell Nim.

Peter Brown, John Stevens, Allan Shawsmith

ALARA

Christine Taylor VK5CTY
ALARA Publicity Officer
16 Fairmont Avenue, Black Forest SA 5035
Packet: VK5CTY@VK5TTY

Melbourne luncheon: **Bron VK3DYL, Mavis VK3KS, myself VK5CTY, Robyn VK2ENX, Jessie VK3VAN Dot VK2DDB and Jean Shaw.**

Another Callsign Changed

Dot VK2DDB is now also VK2DB. When she bought the new callbook she discovered there was no entry for VK2DB. Ray Biddle, who had held the callsign for 35 years had relinquished it in May. He had hoped that his daughter would take it over, but as that had not happened, at 85 he had decided not to renew. He is now more interested in radio astronomy than in radio. He was active in ATV and helped build their first repeater in Sydney.

When Dot contacted Ray he was very happy for her to take over the call, and wrote to ACA authorising it. The only problem is that Dot is now *mike shy* about using it. She says it is quite a different feeling to the "Look, I've upgraded" feeling. Anyway, listen out for a familiar voice with a new callsign.

An Evening With Andy Thomas

ALARA was well represented recently at an evening organised by the WIA(SA)Div and the West Torrens Council, in Adelaide. Three of the VK5 girls had spoken to Andy when he was orbiting on the Russian spacecraft, MIR, Meg VK5YG (then VK5AOV), Mary VK5AMD, and Lyndell VK5KLO. Also at the meeting were Judy VK5BYL (known to many for her CW practice sessions with those diabolical recipes!), Tina VK5TMC, Bev Tamblyn and your correspondent Christine VK5CTY.

It was a fascinating evening. Andy was presented with a regular VK callsign, VK5JAT, and gave the first couple of contacts under the call. So listen for another recognisable voice with a new callsign. The film of life on MIR was interesting as were Andy's answers to our questions. Those who had contacted Andy as VK5MIR were invited to stay back for supper. Everyone agreed he is a remarkable young man, yet he seems to take it all in his stride and considers himself fortunate to have been in the right place at the right time.

News From A New Zealand Girl

Adele ZL1TMD has been a member of ALARA since she was here in Adelaide as a Year 10 Rotary student. She is now in her last year (Honours) of a Technology degree. She is also a part-time computer consultant and active on the Web both within and outside her work.

When Adele first came to Adelaide she was determined to continue her interest in amateur radio while she was here. She first contacted me and we met a number of times. We had a meal with her one night with five or six YLs and a couple of harmonics of similar age to Adele. She comes from a family of amateurs. Dad, Mum and one other daughter have licences.

The New Look ALARA Contest

Marilyn VK3DMS tells me that everyone seems to be happy with the new format. Some girls used the repeat contacts to advantage though conditions were not very good during the day. 80 metres was very good that night, though, and for long enough for a number of contacts to be made at hourly intervals.

Unfortunately the gremlins got into the rules when they were printed in AR so some girls were asked for their membership numbers. This wasn't necessary, of course, and I have to admit that I do not ever remember knowing my membership number. Never mind, gremlins have always been involved in radio, haven't they?

Congratulations to June VK4SJ for her very convincing win. She worked hard and deserves the trophy. Unfortunately there was no winner of the Florence McKenzie Trophy for 1998. We will have to remedy that next time. Now that it is open to all YL CW operators we hope to encourage Morse activity.

Congratulations to Amiee FK8FA, our DX winner. Living in Noumea has its advantages when it comes to contests. It was exciting to receive a log from a YL non-member, Mary WN6HYX, especially as many of her contacts were on CW. We appreciate the OMs who participate, especially the regulars like Len VK3ALD.

We know there was at least one SWL log made, but it wasn't submitted. What a shame. I am sure she was not the only SWL, either. If you listen but don't or can't operate, why not submit an SWL log to some of these contests? The Contest Manager is always delighted to know there are people out there listening.

Some Other Activities

Our Contest Manager and her OM, Geoff VK3ACZ attended a wedding anniversary in Adelaide recently. They brought some photos of their new house, a kit-home with an all-steel, pre-fabricated frame. One series of photos, taken over a matter of hours show that the main frame was up in a day. By the end of the second day the roof was on and the door and window frames were in place (all this in a temperature of 40° plus).

I don't know how long it will be before we hear Marilyn and Geoff on air. Aerials are not high on the list of priorities at the moment. They will have problems if they try to re-erect the five-element beam they had at Irymple. It would overhang the fences either side of their new block! The antenna farm will probably be associated with long wires starting with an 80-metre dipole.

Only recently out of the camera is a photo taken when I was in Melbourne last year. I timed it so that I could attend the YL luncheon that day, and chose the same day as Dot VK2DDB (then) used her Fly Buy points to visit. In the photo we have Bron VK3DYL, Mavis VK3KS, myself VK5CTY, Robyn VK2ENX, Jessie VK3VAN Dot VK2DDB and Jean Shaw. I understand the name of the venue in Melbourne has changed again but it is still in the same place.

As in Adelaide the VK3 luncheons are on the second Friday of the month. If you are in either city on those days please join us. At the January luncheon in Adelaide Meg VK5YG, Jean VK5TSX and Tina VK5TMC were with me. It is great to have a chat and catch up. The venue for the Adelaide lunches may be changing as the current venue has been redecorated and is now not as much to our liking. Keep your eye on the Newsletter or this column for more information.

When I was asked to give a short talk about ALARA to the AHARS members at our January meeting, I was pleased to be able to take the Florence McKenzie trophy to show. It normally lives in the WIA (SA) divisional headquarters, the Burley Griffin Building, but I had it for the new plaque to be attached. With the new rules for that section of the Contest we had to have a new inscription in place of the old one. The wording was agreed to when Marilyn attended the AHARS Buy and Sell in November.

ar

REPEATER LINK

Will McGhie
21 Waterloo Cr Lesmurdie 6076
VK6UU @ VK6BBR will@faroc.com.au

10 KHz Feedback

Recently an AR article on 10 KHz spacing for repeaters was developed from an original idea by Robert VK2MT. Most feedback said NO to the idea and expanded on this. A detailed,negative response from **JOHN MARTIN** FTAC is included in this month's column.

I AM IN FAVOUR of the idea for its relative simplicity to implement and that a channel 10 KHz away could be usable, if the distance between the repeaters was great enough.
If two repeaters sharing the same frequency but at a respectable distance apart interfere occasionally, then moving them 10 KHz apart should fix, or reduce the problem. However I have no evidence to prove this and changing the band plan to 10 KHz spacing might only cause expense and effort for little or no gain.

After reading John's reply (below) you may wish to provide some thoughts of your own.

FTAC Comment

"IN "AR" you note that feedback on the 10 kHz proposal had been negative, and that you would like to see more discussion.

"I agree, but would like to see a balanced discussion. So far you have only mentioned the minor point that extra channels would fill up. You haven't published any of the important arguments which show the idea won't work.

"You said: *To go to lower bandwidth is not the intention of the 10 KHz proposal, but rather to allow the use of more channels.* But you can't use narrower channels unless you reduce the bandwidth of the stations on them. With overlapping channels the closest spacing achievable is twice the channel width: in this case 20 KHz. Some areas might use the odd channels, and others use the evens, but in no area can you use both. In practice the 10 KHz plan is a 20 KHz plan with the extra complication of unnecessary adjacent channel interference.

"Use could then be made of the additional channels at separation distances that would not normally cause co-channel interference".

The "extra" channels are an illusion. No matter where you are, they are not available in your area, they can only be used somewhere else a few hundred KM away. They are like a mirage that you can never reach!

So what is in the balance sheet?

In favour:

A change from 25 KHz channel spacing to a de facto 20 KHz, which would provide four extra 146 MHz repeater pairs, and four more at 147 MHz.

Against:

1. Frequency changes and costs - including fees for changes to licences - for nearly 100 repeaters on 25/75 frequencies.
2. Plus - not mentioned - 10 KHz frequency changes for many repeaters on 00/50 frequencies as well. If you left a repeater on say 146.750 in an area that used channels such as 700, 720, 740, 760 etc, it would occupy two channels. Totally counterproductive.
3. The licensees of most repeaters would have to agree to change frequency.
4. Major inconvenience those without radios 5 or 10 KHz steps on their radios. A total loss for radios like the IC22S, which could only operate on one or two out of every five consecutive channels in any area .
5. The need to co-ordinate repeater frequencies to avoid co-channel stations *and* also those using the channels 10 kHz to either side.
6. Problems of adjacent channel interference in the transition zones between areas using "odd" and "even" channels.
7. In the overcrowded areas, the 8 extra channels would be filled in next to no time.
8. The problem of simplex channels - either cause more inconvenience by changing their channel spacing as well, or cause confusion by leaving them at 25 kHz steps.

"What more can I say? It is a dead horse. The issue arises because of overcrowding in one part of the country. There are too few vacant channels because the area has too many repeaters. They need a rationalisation plan. If some of the least useful repeaters closed down or moved to 70 cm, their frequencies could be used elsewhere. Not easy to agree on, but far better than expecting the whole country to bail them out with scheme which cannot deliver.

Ho, it seems that I keep dumping wet blankets on you, sorry about that. But I suppose you're used to it by now!

73 John VK3KWA

Dead issue?

Sounds like John not only holds the FTAC title but also puts some effort into it. Perhaps the 10 KHz idea is technically wrong and should be pronounced dead. Given merely a few more channels they would fill quickly and we would be back where we are now. John's response might tempt Robert VK2MT to comment further.

Thanks, John, for the response. Some praise for John; he has held the FTAC position for many years and has done the very best at all times. One of the few prepared to put in real time to a most demanding job that must take up several hours each week. Sounds easy to organise the odd few band plans but the job requires attention to detail and good record keeping.

VK6RAV Visit

Repeater site VK6RAV Northam had a service visit recently. The repeater, installed some 90 KM ENE of Perth a year ago, had developed intermittent desensing. Desensing is the plague of 2 metre repeaters. In hindsight, 600 KHz spacing would not be chosen, as the 100 dB of isolation required for no desensing is difficult to achieve over long periods of time, but we are stuck with it. 1 MHz would have been a more suitable as some 10 dB less isolation required.

Why was 600 KHz chosen? It was to keep repeater operation contained within 1 MHz of 2-metre band space between 146 and 147 in the USA. 600 KHz allowed for enough repeater channels all within 1 MHz. The numbers of repeaters grew and moved into the 147 to 148 MHz segment but it was too late to change the band plans by then. We are paying for short sighted planning. But to be fair no one could have foreseen the tremendous growth of repeaters in the late 60's and their need for increased band space.

Australia and New Zealand both had 500 KHz spacing originally for a couple of years before changing to 600 KHz spacing.

Back to VK6RAV Northam. The desensing was not found due to its intermittent nature and a further visit is planned. While on site a test was carried out back to VK6RUF, our UHF repeater in Perth, to gauge signal strengths. There are thoughts to link this little used repeater back to Perth. The test indicated enough signal strength for a link and planning is under way.

Insurance

At long last; we received an answer from our insurers on unqualified people (non-riggers) climbing masts.

The answer is that we are covered.

The insurance company accepts that most of us don't hold any climbing qualifications. However the insurance company refer to the climbers as 'experienced'.

This was not defined and we take it to mean have climbed before. So if anyone falls or is injured in any way it can not be on their first climb!

ar

HF PREDICTIONS

by Evan Jarman VK3ANI
34 Alandale Court, Blackburn Vic 3130

March 1999
T index: 111

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

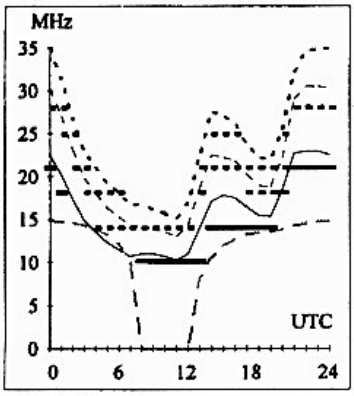
- Upper Decile (F-layer)
- F-layer Maximum Useable Frequency
- E-layer Maximum Useable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies; when useable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

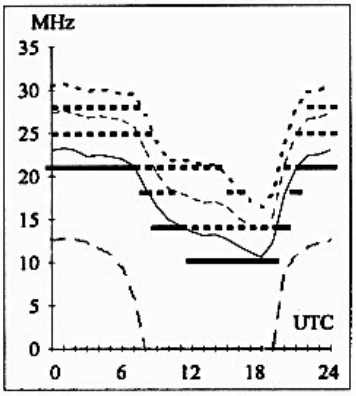
These predictions were made with the Ionospheric Prediction Service program: ASAPS version 4.

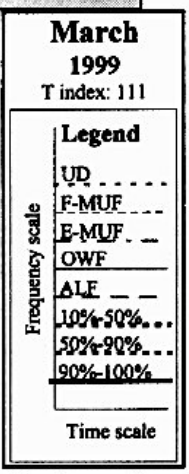
ar

Adelaide-Ottawa 58
First F 0-5 Short 16901 km

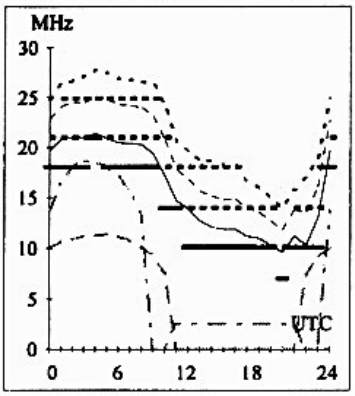


Brisbane-Auckland 123
First 1F7-10 1E0 Short 2289 km

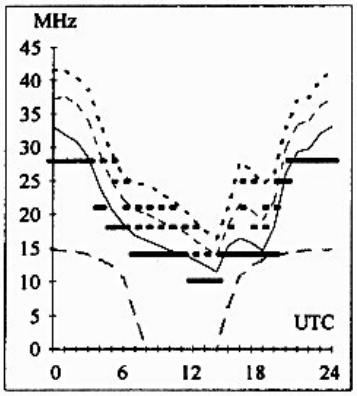




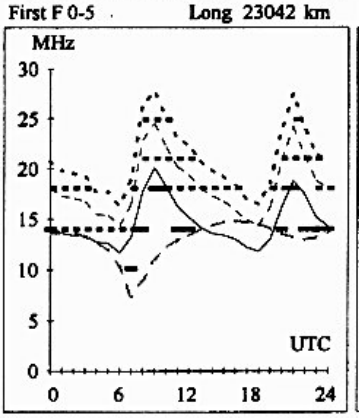
Adelaide-Singapore 311
Second 3F11-17 3E1 Short 5414 km



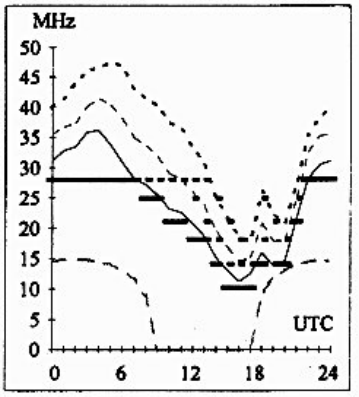
Brisbane-Los Angeles 59
Second 4F3-8 4E0 Short 11563 km



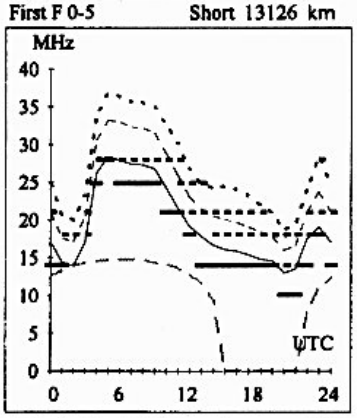
Canberra-London 136
First F 0-5 Long 23042 km



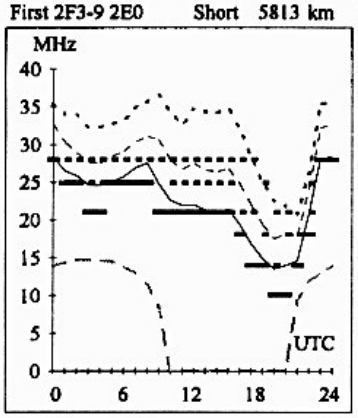
Darwin-Honolulu 65
First 3F3-9 3E0 Short 8636 km



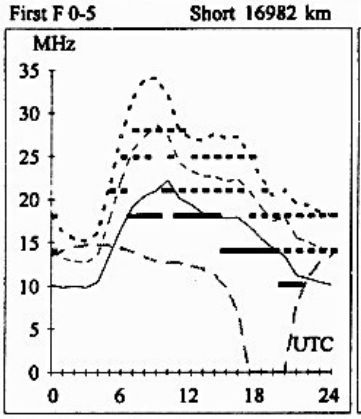
Adelaide-Tel Aviv 291
First F 0-5 Short 13126 km



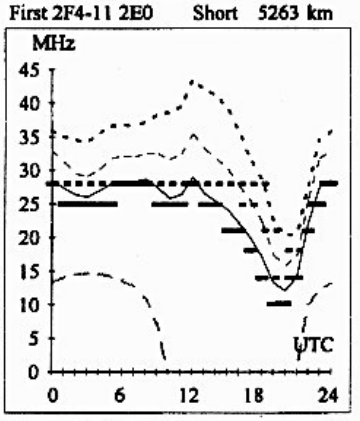
Brisbane-Manila 320
First 2F3-9 2E0 Short 5813 km



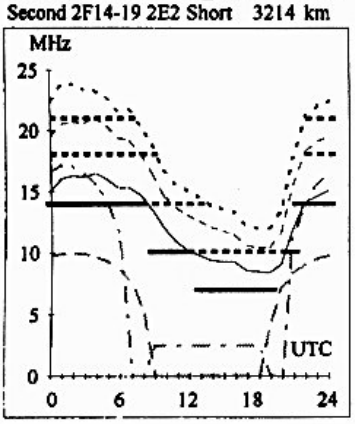
Canberra-London 316
First F 0-5 Short 16982 km



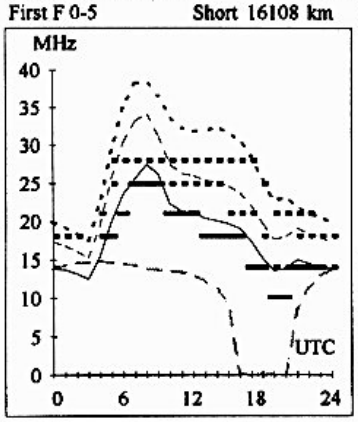
Darwin-Osaka 5
First 2F4-11 2E0 Short 5263 km



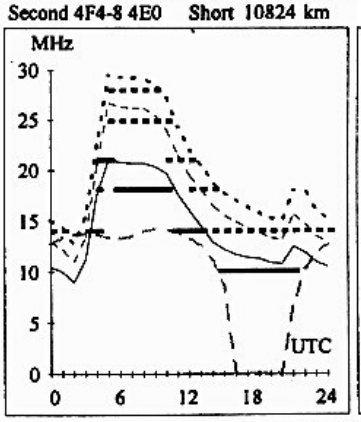
Adelaide-Wellington 114
Second 2F14-19 2E2 Short 3214 km



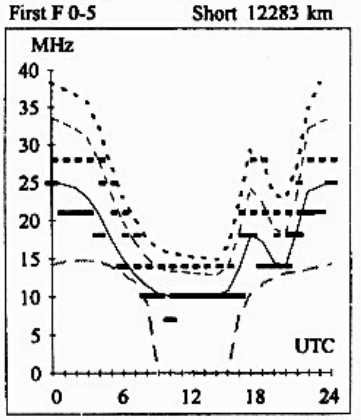
Brisbane-Rome 305
First F 0-5 Short 16108 km



Canberra-Pretoria 231
Second 4F4-8 4E0 Short 10824 km

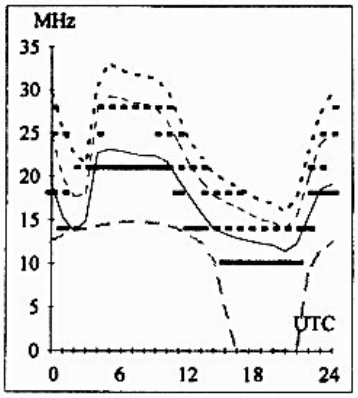


Darwin-Seattle 44
First F 0-5 Short 12283 km

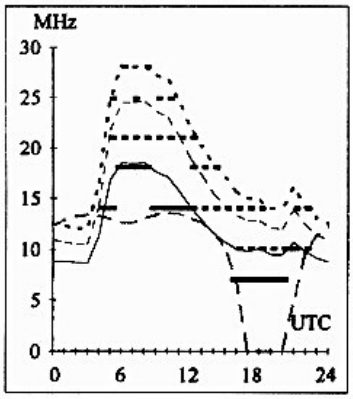


HF Predictions

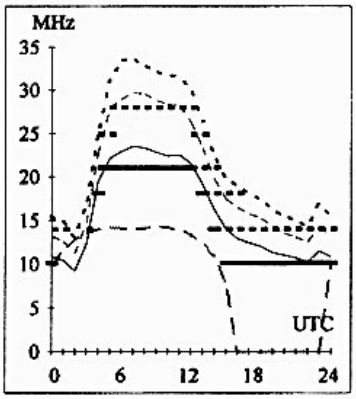
Hobart-Cairo 278
First F 0-5 Short 14264 km



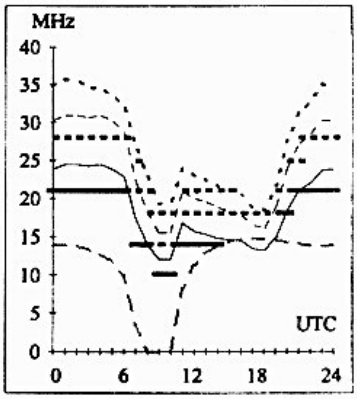
Melbourne-Capetown 222
Second 4F5-9 4E0 Short 10316 km



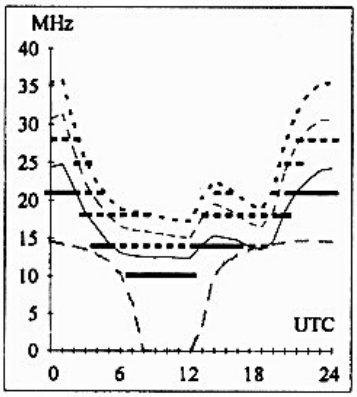
Perth-Johannesburg 248
First 3F4-7 3E0 Short 8315 km



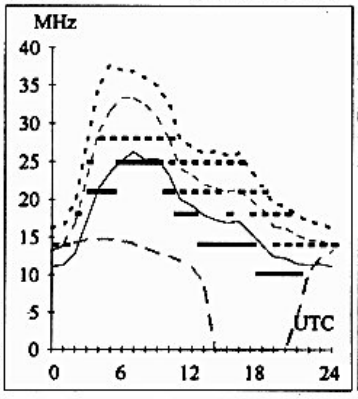
Sydney-Barbados 119
First F 0-5 Short 16155 km



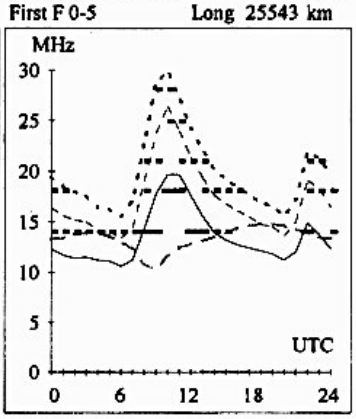
Hobart-Chicago 72
First F 0-5 Short 15576 km



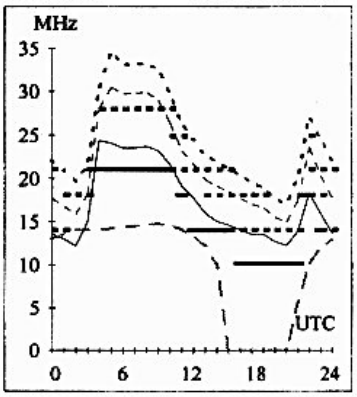
Melbourne-Moscow 316
First F 0-5 Short 14428 km



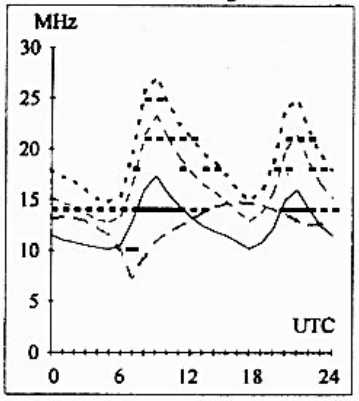
Perth-London 133
First F 0-5 Long 25543 km



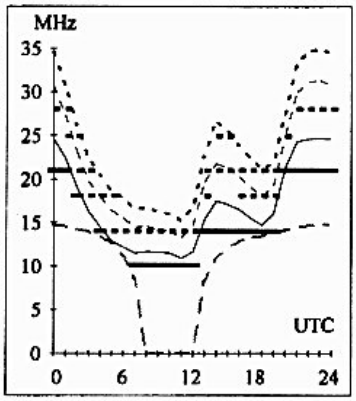
Sydney-Nairobi 255
First F 0-5 Short 12147 km



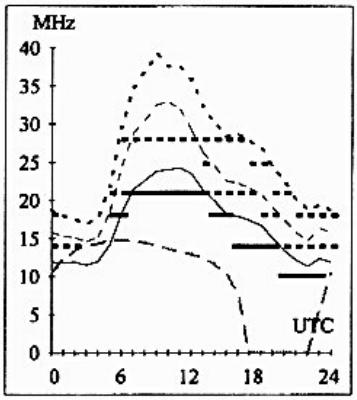
Hobart-Oslo 138
First F 0-5 Long 23450 km



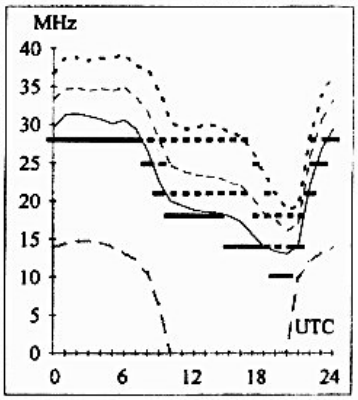
Melbourne-Ottawa 63
First F 0-5 Short 16557 km



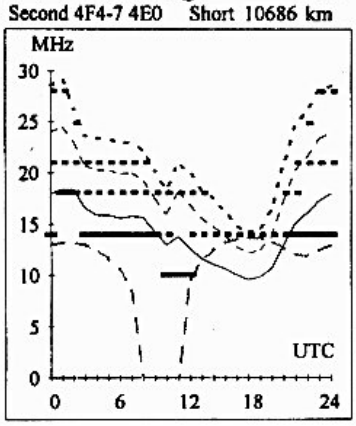
Perth-London 313
First F 0-5 Short 14481 km



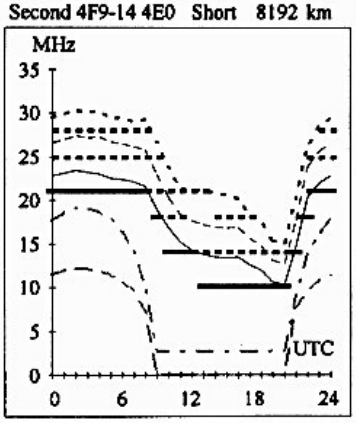
Sydney-Seoul 340
First 3F4-9 3E0 Short 8325 km



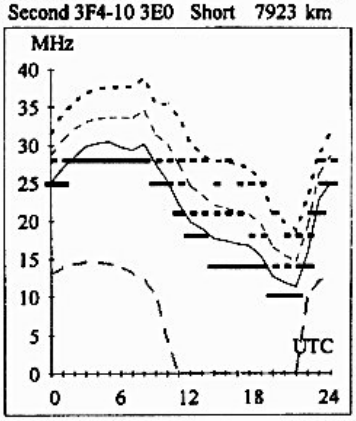
Hobart-Santiago 149
Second 4F4-7 4E0 Short 10686 km



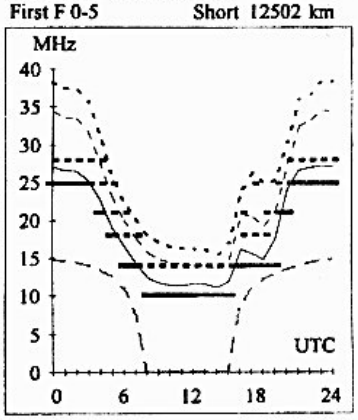
Melbourne-Tokyo 356
Second 4F9-14 4E0 Short 8192 km



Perth-Tokyo 20
Second 3F4-10 3E0 Short 7923 km



Sydney-Vancouver 45
First F 0-5 Short 12502 km



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- Hamads may be submitted on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
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● **Attention all restricted licence holders.** Do you believe that morse code exams requirement should be amended to five words per minute maximum? Join a campaign for reform. Contact Brian VK2AZW NOW. QTHR.

FOR SALE VK2 NSW

● **YAESU FT-890 all-mode HF Transceiver** 100W 160-10m Allband Rx. Brand new condition, never used on Tx Demo only on Rx $1500. FM900s 6&2M transceivers bith sets $250. Chris VK2YMW QTHR 02 9487 2764

● **Shack clearance:** Old test equipment (1950's) valve operated, working; Audio generator, 4X 6V6's; Het. frequency meter & RF Osc. Xtal check, VFO, audio modulator, offers? Many pre-war valves, Tx&Rx request needs $5 ea. WW2 BC221 het. freq. meter mains op. VGC charts and book $50. WW2 4band aircraft receiver 200-1500 KHz CG46115 GE/US navy, mods for mains supply, working $80. AWA Audio BFO 0-13 kHz $40 Oskerblock SWR-Pwr meter SWR200B S/N54039 $30 Mizuho Preselector SX101 $30. Stingray Marine MF/HF SSB transceiver 120W 2-4-6 MHz VGC with Wagner ATU $800 ONO. YAESU FT902DM S/N OM160412 EC but external power pack (original xformer blew) $300. Yaesu FV101DM S/N IJ 010205 EC $50. Stingray CB converted 24ch 10M $80. YAESU 2M FT720RVH S/N 060774 with mount and remote cable EC $200. Himound key HK707 EC $25. Keith VK2AXN QTHR 02 9489 0304 keithfreda@msn.com.au

● **70Cm. TAIT 555 2** Channel synthesized, tuned, and programmed. Any two channels simplex or repeater $100 David 02 4821 5036

● **HEATHKIT CW TX HX-1681** with PS-23 supply. Also YAESU FR101 digital receiver. All manuals and in good working order. $500 the lot. Ray VK2COX QTHR 02 6345 1911

● **YAESU FT212RH2m 45 watt transceiver** $330. 5/8 Ground Plane Antenna. Marco VK2ARC 02 9774 3492 S/N 1M790221

● **Kenwood 820S $400.** 240/12 volt. Power meter SWR $20. Telereader $20. Multi band vertical $25. Paton VCT. SIGEN VCT EHT probe $75 for three ONO. PAKET Radio rig 486DX2 computer IC22s PACOMM TNC320 $450. ONO. VK2AHP QTHR.

FOR SALE VK3 VIC

● **Autek Research CMOS Keyer (U.S.A)** Plus message memory 12V.DC paddle req. $25. Ramsay 60 MHz Counter inc. 600MHz Prescaler 12V.DC $25. Reg.P.S 13V5A voltmeter, ammeter $25. BMC. 27cm green screen monitor $25. All items working order. Andy VK3UJ QTHR 9726 8879

● **Transistor Service Manuals** Vols. 1 & 2. Service details of hundreds of transistor radios. $20 the pair. Allen VK3SM. QTHR. 03 9386 4406

● **Kenwood TM-2550A 2m FM mobile transceiver** 45 Watts GC boxs etc $300. Hewlett-Packard signal generator model 608D 10mc to 420mc. Variable attenuator .1 microvolt to 0.5 volt manual GC $300. ONO Ray VK3RD 03 9726 0222

FOR SALE VK4 QLD

● **Antenna log periodic 16 element** AV11C freq 5 to 30 MHz gain 12 DBi power 5KW. New $500. Power Klystron 2.4 GHz up to 1.25 kw output 40 DB gain. New $350. 4CX10 000 socket. New $300. EIMAC SK806 chimney. New $25. Coaxial relay 24 volt "N" type changeover (S.P.D.T) New $50. 6146B tubes (used) O.K. 4 for $30. Microwave coax 4mm dia copper tube "N" connectors 2 metre lengths $25 each. Collins 500kHz mechanical and crystal filter. New $50 each. 07 3269 6647. John VK4KK QTHR

● **FT901DM S/N 8E820429** good condition with hand book and workshop manual. $500. Plus freight. VK4BMN QTHR 07 4622 4365 or 0418 742 338

FOR SALE VK5 SA

● **Book Collectors:** Radio and Hobbies in Australia Vol.1 No.1 April 1939 VGC. Any offers? Harro VK5HK 08 8323 9622

● **Kenwood TS-130S, AT-130 ATU,** Ext 120 VFO, ML-50 desk mic, mobile bracket, service manual, all other manuals, EC, $830. 8 element log periodic antenna $400. Sell complete for $1100. More for sale. Paul VK5MAP QTHR Ph/fax 08 8651 2398

● **Kenwood TS50** as new mint condition. Still in box. Hardly used. $900 SN 50403113 Roger VK5NWE 08 8388 1863

FOR SALE VK6 WA

● **YAESU FT707 HF trans $450.** YAESU FP707 P.S. $150. YAESU YD148 desk mic $30. Antenna HB35C 3El tribeam $425. Coax R68 30m $60. Mast Galv. pipe 12m telescope $50. The lot $1000. Colin VK6ZB Ph 08 9725 8680

● **Kenwood VOX4 $30.** VCI0 For R2000 $20. DFK7 Rem. Kit $15. FM board IC740-5 $10. Final Transistors 2SC2290 pair $80. MRF 422 pair $170 ICOM keyer IC735 $15. ICOM 720A band change relay, new $40. CODAN tuner 7208 Mk 2 $50. AR 2001 scanner $90 MFJ 401B keyer $15. ICOM SM5 mic $30. VK6RO Rogers 22 Grace Street Ferndale WA

FOR SALE VK7 TAS

● **ICOM HF all band tranceiver IC720A,** plus matching IC-PS20 Power supply, with speaker, hand and desk mikes, handbooks etc. As is $600 the lot. Retiring Ham relocating. Alan 07 3408 9701

● **YAESU FT990 Deluxe Top of the Range HF T/ceiver** inc. Gen. Coverage Receive Auto ATV & P/supply. As new boxes $1695.00 **Yaesu FT900 T/ceiver** inc. Collins filter Auto ATV 3 months old. Alen VK7AN 03 6327 1171 or 0417-354410. Above must sell inc. Manual Boxes etc.

WANTED VK2 NSW

● **ICOM IC22A circuit diagram.** Note this is the 22 channel Xtal locked model. Copy will do. Cost happily recompensed. Laurie VK2ALV QTHR 02 4229 8820

● **Service manual for Kenwood TS600 6m.** XCVR. Also power supply input ? for same AC or DC OK. Vince VK2VC 02 9713 6655

● **Kenwood TS 870s, GAP V. na,** 3-1000 valves. Tom VK2OE ph. .42 (evenings)

● **Service manual and/or circuit AWA teleradio** SS70 30W SSB XCVR. AWA manual No. 62570R. Buy borrow or pay for copy. VK2BGP 02 6743 6519 QTHR

● **Kantronics Kanplus Modem.** Doug VK2DDR Ph. 02 9949 3426

● **One inch audio or video tapes** John VK2ZHM (02) 9417 5338

WANTED VK3 VIC

● **Antenna rotator suitable for 20 metre Yagi** in good working order. Evan Phillips VK3BIX Phone (Bus Hrs 03 9687 3371

Operating Manual for YAESU FLDX2000 Linear Amp. Copy. Costs Covered VK3DBZ Phone 03 5367 5820

● **Kenwood TS830S and VFO230.** Must be EC and GWO. Damien VK3RX 03 5427 3121.

● **Circuit and information for TRI520 aircraft radio**. Also seeking No. 11 set chassis. Clem VK3CYD 03 5126 2064 clem@gippstafe.vic.edu.au POBox 285 Newborough 3825

● **Control book for Hygain Ham IV rotator** or circuit details for same. Any details appreciated. VK3FIR QTHR 03 9752 3224

● **Operating manual for YAESU FL DX2000** linear amp. Copy cost covered. VK3DBZ Ph 03 5367 5820

WANTED VK4 QLD

● **YAESU MUSEN FT107M owners manual** or photostat copy OK. Will pay costs or buy; Rotator Emotator Kenpro Create or Hygain Triband Yagi. John VK4SKY PO Box 116 Coolangatta QLD 4225. Ph 0417 410 503

WANTED VK5 SA

● **YAESU FT-201 Technical or Workshop Manual**. Photocopy OK. Will pay all costs. Contact Mark VK8MA - 08 89831699 evenings. PO Box 228, Howard Springs, NT 0835 or vk8ma@ozemail.com.au

WANTED VK7 TAS

● **Still wanting an MFJ 764 dummy load** new or good condition. Can anyone help me track one down. Tony VK7CAJ. QTHR. P.S. Have MFJ 260c dummy load for swap etc.

WANTED VK8 NT

● **Automatic ATU for Codan 8525 Transceiver.** Peter VK8KZZ QTHR 0418 894404 or Peter.Clee@parkview.com.au

TRADE ADS

● **AMIDON FERROMAGNETIC CORES:**

For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Assoc TV Service, Hobart: Truscotts Electronic World, Melbourne and Mildura: Alpha Tango Products, Perth: Haven Electronics, Nowra: and WIA Equipment Supplies, Adelaide.

● **WEATHER FAX programs** for IBM XT/ATs *** "RADFAXZ" $35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" $75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3.00 postage. ONLY from M. Delahunty, 42 Villers St, New Farm QLD 4005. Ph 07 358 2785.

WANTED

A VOLUNTEER TO MANAGE THE WIA CALL BOOK

Duties are —

- to keep the Call Book information up to date
- to add new data as appropriate, and
- to arrange printing for distribution in October each year.

For further details:

Martin Luther VK5GN

AH phone: 08 8524 3440 fax: 08 8524 3836

email: MartinL@AppDes.com.au

WIA Division Directory

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers		News Broadcasts Note: All times are local. All frequencies MHz.	Fees
VK1 ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Hugh Blemings John Woolner Les Davey	VK1YYZ VK1ET VK1LD	3.590, 146.950, 438.375, 438.325, 438.225 & 438.025 FM each Sunday from 8.00pm AEST. News text on packet BCAST@VK1BBS, *http://www.vk1.wia.ampr.org & aus.radio.amateur.misc newsgroup.* Send items by packet as personal message BCAST@VK1BBS or e-mail to broadcast@vk1.wia.ampr.org.	(F) $72.00 (G) (S) $58.00 (X) $44.00
VK2 NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer (Office hours Mon-Fri 11.00-14.00) Web: *http://ozemail.com.au/~vk2wi/* e-mail: *vk2wi@ozemail.com.au* Packet BBS: VK2WI on 144.850 MHz	Michael Corbin Eric Fossey Eric Van De Weyer	VK2YC VK2EFY VK2KUR	From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.170, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1273.500 (* morning only) with relays to some of 18.120, 21.170, 581.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.	(F) $69.00 (G) (S) $56.00 (X) $41.00
VK3 Victorian Division 40G Victory Boulevard Ashburton VIC 3147 Phone 03 9885 9261 Fax 03 9885 9298	President Secretary Treasurer (Office hours Tue & Thur 0830-1530) e-mail: *vk3wi@rint.com.au* Web: *http://www.tbsa.com.au/~wiavic/*	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3NC	VK3BWI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WI on Victorian packet BBS and WIA VIC Web Site.	(F) $75.00 (G) (S) $61.00 (X) $47.00
VK4 Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 3221 9377	President Secretary Treasurer e-mail: *secretary@wiaq.powerup.com.au* Web: *http://www.wiaq.powerup.com.au*	Colin Gladstone Peter Harding Alistair Elrick	VK4ACG VK4JPH VK4FTL	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 21.175 MHz, 28.400 MHz SSB, 29.220 MHz FM, 53.725 MHz FM, 147.000 MHz FM, 438.500 MHz (Brisbane only), and regional VHF/UHF repeaters at 0900 hrs EAST Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) $74.00 (G) (S) $60.00 (X) $46.00
VK5 South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8264 0463	President Secretary Treasurer Web: *http://www.vk5wia.ampr.org/*	Ian Hunt Merv Miller Joe Burford	VK5QX VK5MX VK5UJ	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) $75.00 (G) (S) $61.00 (X) $47.00
VK6 West Australian Division PO Box 10 West Perth WA 6872 Phone 08 9351 8873	President Secretary Treasurer Web: *http://www.faroc.com.au/~vk6wia/* e-mail: *vk6wia@faroc.com.au*	Cliff Bastin Christine Bastin Bruce Hedland-Thomas	VK6LZ VK6ZLZ VK6OO	146.700 FM(R), 438.525 FM(R), 29.120 FM at 0930 and 1900 hrs Sundays from Perth, relayed (morning only) on 1.865, 3.564, 3.582 (Busselton), 7.075, 14.116 (North), 14.175 (East), 21.185, 50.150; (morning and evening) 146.900(R) Mt William (Bunbury), 147.00(R) Katanning, 147.200(R) Cataby, 147.250(R) Mt Saddleback (Boddington), and 147.350(R) Busselton; (evening only) 1.865, 3.564 MHz.	(F) $62.00 (G) (S) $50.00 (X) $34.00
VK7 Tasmanian Division 24 Targett Street Scamander TAS 7250 Phone 03 6372 5305	President Secretary Treasurer Web: *http://www.wia.tasnet.net* e-mail: *vk7kpg@hamnet.hotnet.com.au*	Ron Churcher Paul Godden John Klop	VK7RN VK7KPG VK7KCC	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.	(F) $74.00 (G) (S) $60.00 (X) $46.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

Membership Grades
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The new VX-1R is one of the world's smallest dualband amateur rigs, sporting a 2m/70cm transceiver with wideband receiver in a case sized just 47 x 81 x 25mm WHD. It has impressive memory and scanning facilities as well as receive coverage of VHF and UHF TV, AM and FM broadcast bands, AM aircraft band and other public service frequencies from 76 to 999 MHz*.

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Besides being a fully-featured dual-band amateur transceiver, the VX-1R has extraordinarily wide receiver frequency coverage; you'll also be pleasantly surprised by the great audio on the FM broadcast band. A dual-watch facility is provided – and together with the AM, FM-narrow and FM-wide reception modes – you'll be having fun even when you're not operating on the amateur bands. For selective calling and listening, the VX-1R also includes a CTCSS encoder/decoder and a 104-code Digital Code Squelch (DCS) system as well as a Tone Search facility for both CTCSS and DCS encoded transmissions.

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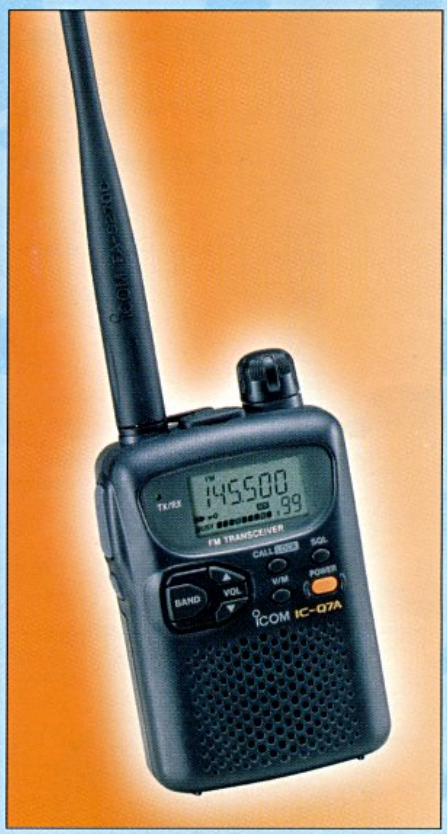

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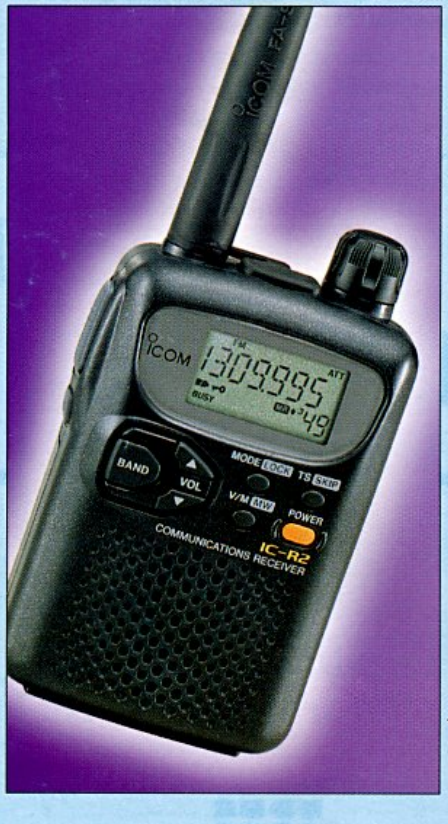

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